ADE-6050/6052

Intel Core Duo/Solo
945GME Mini ITX Board

User's Manual

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2. Description of your peripheral attachments
3. Description of your software (operating system, version, application software, etc.)
4. A complete description of the problem
5. The exact wording of any error messages

How to Use This Manual

This manual is written for the system integrator, PC technician and knowledgeable PC end user. It describes how to configure your system board to meet various operating requirements. The user's manual is divided into four chapters, with each chapter addressing a basic concept and operation of the server board.

Chapter 1: Introduction - presents what you have inside the box and gives you an overview of the product specifications and basic system architecture for the system board.

Chapter 2: Hardware Configuration Setting - shows the definitions and locations of Jumpers and Connectors so that you can easily configure your system.

Chapter 3: System Installation - describes how to properly mount the CPU and main memory for a safe installation. It will also introduce and show you the driver installation procedure for the Graphics Controller and Ethernet Controller.

Chapter 4: BIOS Setup Information - specifies the meaning of each setup parameter, how to get advanced BIOS performance.

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Revision History

Revision	Date	Comment
Rev.1.0	Jan. 2007	Initial released
Rev.1.1	Apr. 2008	1. DVI pin assignment modified 2. BIOS for ADE-6052 inserted 3. WDT & GPIO programming inserted

CHAPTER 1

1. Introduction

1.1 Description

The ADE-6050/ADE-6052 all-in-one Mini-ITX is designed to fit a high performance Intel® Core™ Duo based processor and compatible for high-end computer system applications with PCI bus architecture to meet today's demanding pace and keep complete compatibility with hardware and software designed. The onboard devices support one PCI Express x1 and one PCI slot, integrated graphics, and onboard dual Marvell Gigabit Ethernet controllers. It's beneficial to build up a high performance and high data availability system for VARs, or system integrators.

The ADE-6050/ADE-6052 supports Intel® Core™ Duo socket M processors built Intel® 945GME and ICH7M chipset integrated GMA 950 graphics with DVMT 3.0 display memory up to 224 MB for dual display function by VGA/LVDS, VGA/DVI, DVI/LVDS, and VGA/VGA. The board supports two SODIMMs up to 2 GB with dual channel DDR2 533/667, enhanced onboard one PCI-IDE interface supporting one drive up to PIO mode 4 timing and Ultra ATA 33/66/100 synchronous mode feature, one CF socket interface, and two SATAII high-speed data transferring at up to 3 GB/s, integrated Realtek® ALC655 AC97 codec. The onboard Super I/O chipsets support four serial ports: two RS-232 serial port interfaces and two RS-232 pin headers, Hardware Monitor function, eight Hi-speed USB 2.0 ports offering up to 40X greater bandwidth over USB 1.1, and two 6-pin Mini-DIN connectors for PS/2 mouse and keyboard. Besides, high precision Real Time Clock built to support Y2K for accurate scheduling and storing configuration information, one 20-pin standard connector designed to support ATX power function, and a feature of CPU overheat protection will provide user more security and stability.

Target for key embedded applications such as Point of Sales (POS), automated KIOSKs, medical instruments, advanced automation for buildings and homes, and gaming machines. All of these features make ADE-6050/ADE-6052 excellent in all-in-one applications.

1.2 Packing Check List

The ADE-6050/ADE-6052 package includes the following basic items accompany with this manual.

- One ADE-6050/ADE-6052 Mini ITX
- One Installation Guide for ADE-6050/ADE-6052
- One 40-pin IDE cable
- One Serial ATA cable
- One USB cable
- One Serial port for RS232 cable
- One I/O Shield cover
- One Supporting CD Driver contains internal VGA display driver, Ethernet network controller driver and on board devices drivers

If any of these items is damaged or missed, please contact your vendor and save all packing materials for future replacement and maintenance.

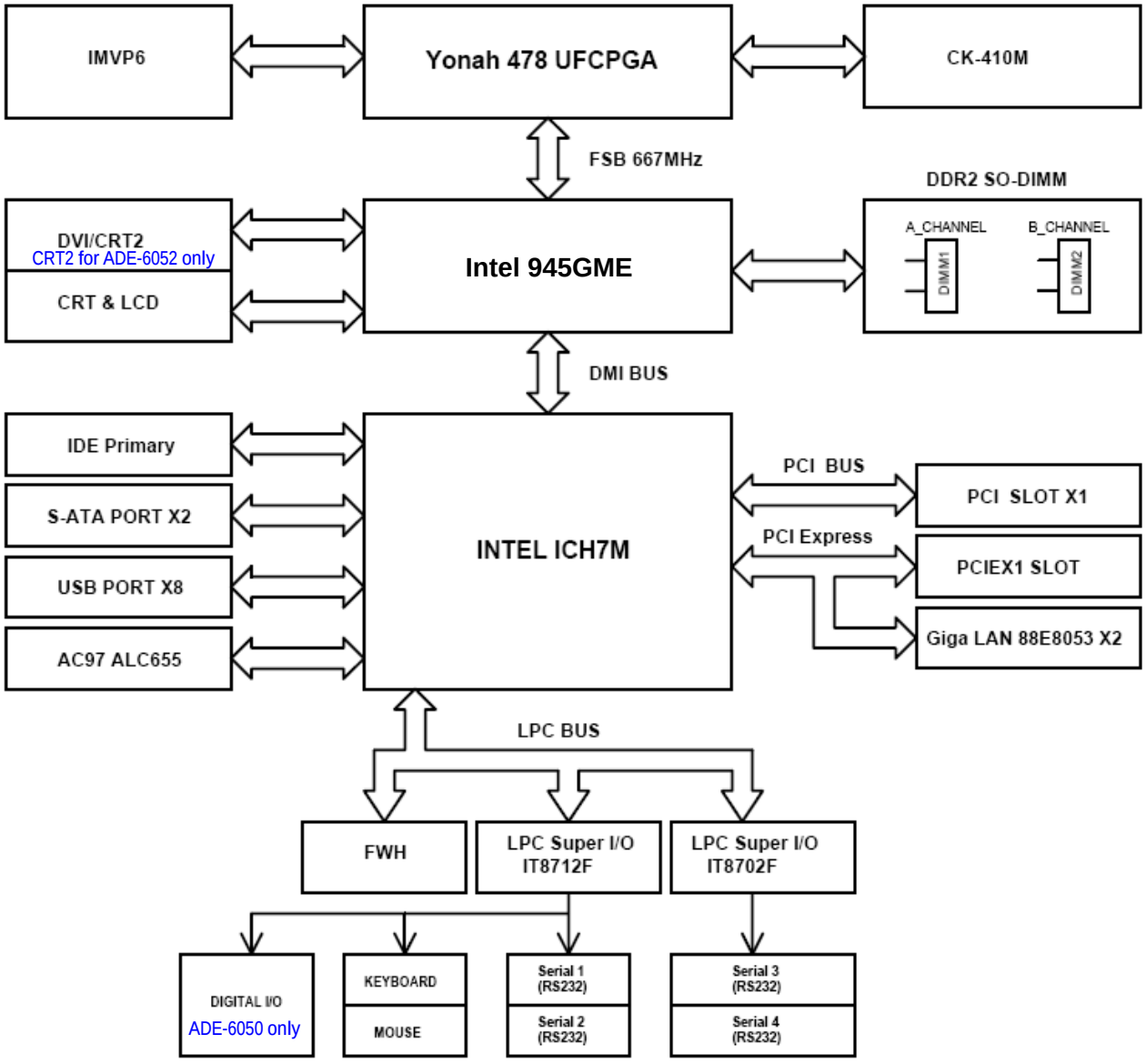
1.3 Specifications

System	
CPU	Intel® Core™ Duo / Solo and Celeron® M processor (Yonah Core) Intel® Core™ 2 Duo Mobile processor on Napa refresh (Merom/Socket M)
FSB	FSB 533/667 MHz
BIOS	Award BIOS with 4 Mb Flash ROM
System Chipset	Intel® 945GME + ICH7M
I/O Chip	ITE® IT8712F
System Memory	2 x 200-pin SODIMM sockets support dual-channel DDR2 533/667 SDRAM up to 2GB
Storage	1 x Ultra DMA33 supports two IDE devices by 40-Pin IDE connector, 2 x Serial ATA connectors high-speed data transfer at up to 300 MB/s
SSD	1 x CompactFlash™ Type I/II Socket
Watchdog Timer	Reset: 1 sec.~255 min. and 1 sec. or 1 min./step
H/W Status Monitor	Monitoring system temperature, voltage, and cooling fan status. Auto throttling control when CPU overheats.
GPIO	Onboard programmable 8-bit Digital I/O interface (ADE-6050 only)
Expansion	1 x PCI-E x1, 1 x 32-bit PCI slot
MIO	
Internal I/O	2 x RS-232, 4 x USB 2.0, 1 x IrDA, 1 x external KB/MS
Rear I/O	1 x KB/MS, 1 X VGA, 1 x DVI, 2 x RS-232, 2 x LAN, 4 x USB, 1 x Audio Jack
Display	
Chipset	Intel® 945GME + ICH7M
Display Memory	Intel® DVMT 3.0 supports up to 224 MB video memory
Resolution	Analog Display : up to 2048 x 1536 @ 75MHz video memory(QXGA) Digital LVDS : up to 2048 x 1536 (QXGA)
VGA/LCD Interface	One DSUB-15 and One DVI connectors (Chrontel® CH7317A for analog RGB output for ADE-6052)
LVDS	Dual Channel (2 x 18-bit) LVDS
DVI	Chrontel® CH7307 DVI transmitter

Audio	
AC97 Codec	Realtek® ALC655 5.1CH 3D audio codec
Audio Interface	Line in, Line out, Mic in by jack, CD-in by pin header
Ethernet	
Chipset	Dual Marvell® 88E8053 PCI-E Gigabit Ethernet controllers
Ethernet Interface	IEEE 802.3 10/100/1000 BASE-TX
Mechanical & Environmental	
Power Requirement	+3.3 V @ 0.32 A, +5 V @ 2.67 A, +12 V @ 2.13 A, 5VSB @ 0.02 A
Power Type	20-pin ATX power connector
Operating Temperature	0~60°C (32~140°F)
Operating Humidity	0%~90% relative humidity, non-condensing
Size (L x W)	6.69" x 6.69" (170 mm x 170 mm)
Weight	0.94lbs (430g)

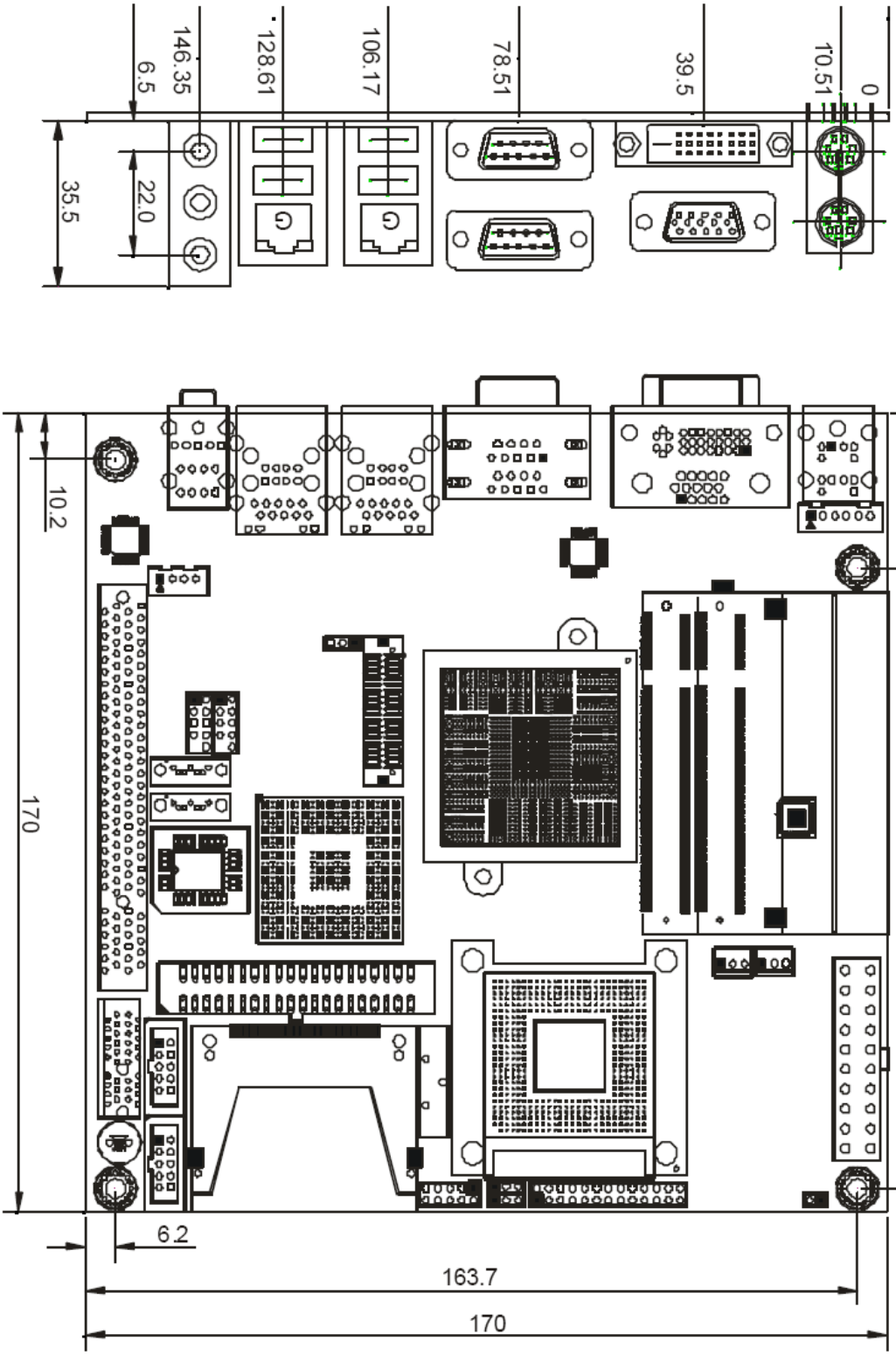
1.4 System Architecture

All of details operating relations are shown in ADE-6050/ADE-6052 system block diagram.



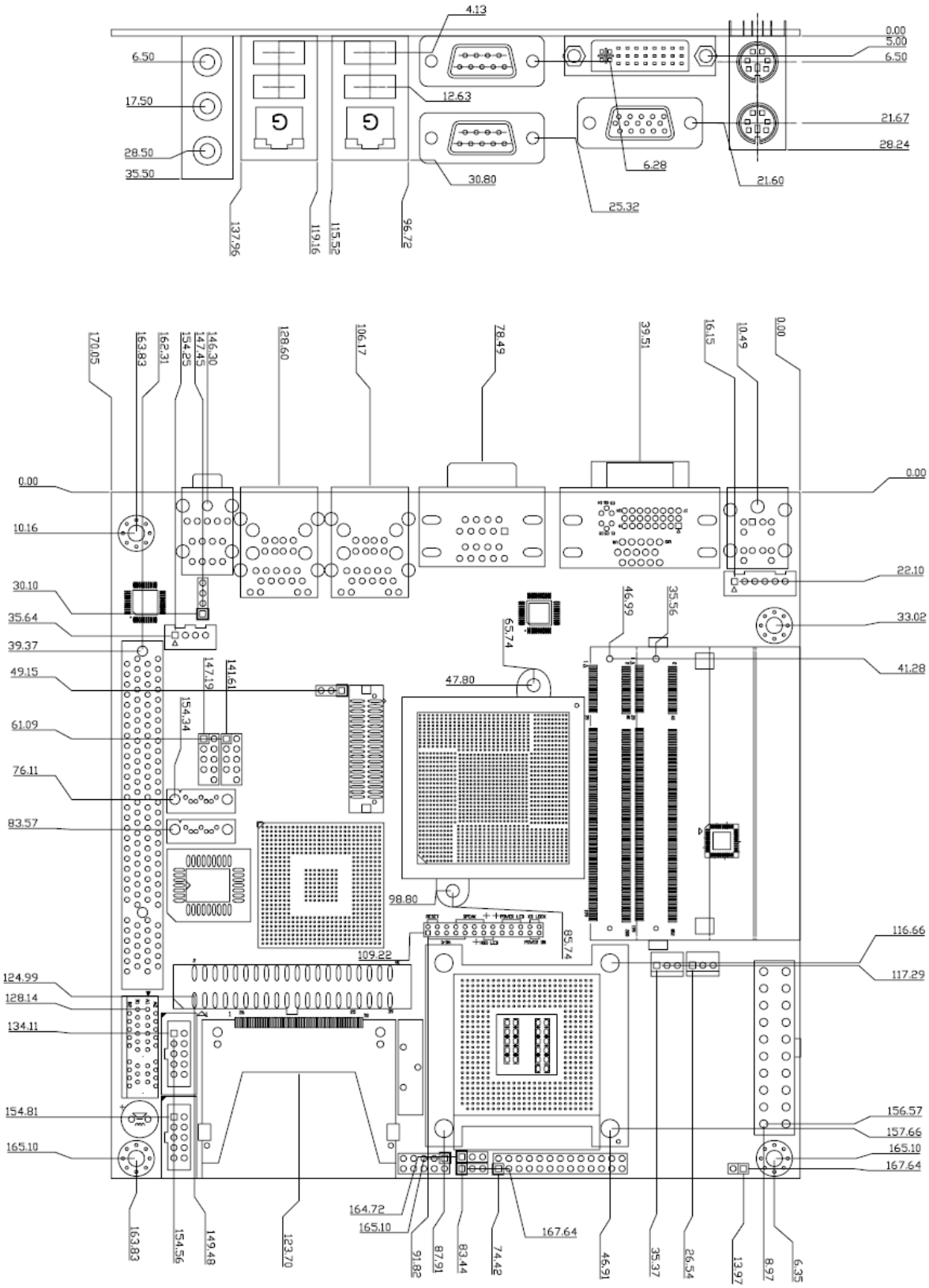
1.5 Dimensions

1.5.1 ADE-6050



Unit: mm

1.5.2 ADE-6052



Unit: mm

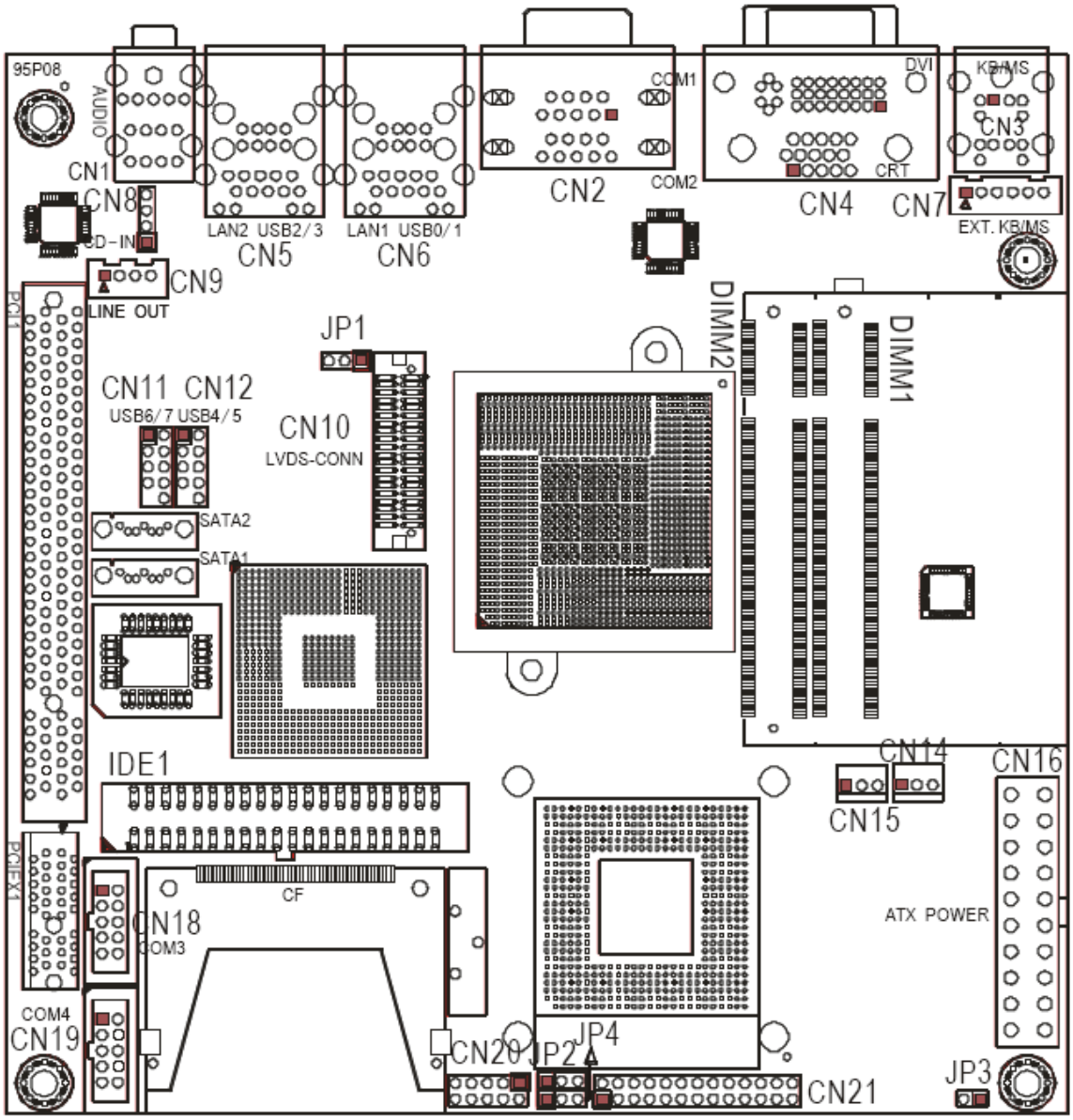
CHAPTER 2

2. Hardware Configuration Setting

This chapter gives the definitions and shows the positions of jumpers, headers and connectors. All of the configuration jumpers on the board are in the proper position. The default settings shipped from factory are marked with an asterisk (★).

In general, jumpers on the board are used to select options for certain features. Some of the jumpers are designed to be user-configurable, allowing for system enhancement. The others are for testing purpose only and should not be altered. To select any option, cover the jumper cap over (SHORT) or remove (NC) it from the jumper pins according to the following instructions. Here, NC stands for "Not Connect".

2.1 Board Layout



2.2 Jumpers & Connectors

JUMPERS	FUNCTION	REMARK
JP1	LVDS power select	1 x 3 header
JP2	Clear CMOS select	1 x 3 header
JP3	Auto power on select	1 x 2 header
JP4	BIOS write protection select	1 x 3 header

CONNECTORS	FUNCTION	REMARK
CN1	Audio connector	
CN2	COM1/2 RS232 serial port connectors	
CN3	PS/2 mouse & keyboard connectors	
CN4	D-sub 15-pin VGA & DVI connector (DVI-D for ADE-6050, DVI-I for ADE-6052)	
CN5	USB 2, 3 & LAN 2 connectors	
CN6	USB 0, 1 & LAN 1 connectors	
CN7	External keyboard & mouse connector	1 x 6 wafer
CN8	CD-In connector	1 x 4 header
CN9	Line out connector	1 x 4 wafer
CN10	LVDS connector	HIROSE
CN11	Internal USB connector 6 & 7	2 x 5 header
CN12	Internal USB connector 4 & 5	2 x 5 header
CN14	System fan connector	1 x 3 wafer
CN15	CPU fan connector	1 x 3 wafer
CN16	ATX power connector	2 x 10 connector
CN18	COM3 RS-232 serial port pin-header	2 x 5 header
CN19	COM4 RS-232 serial port pin-header	2 x 5 header
CN20	8-bit Digital I/O pin-header (ADE-6050 only)	2 x 5 header
CN21	Front panel connector	2 x 13 header
IDE1	Primary IDE connector	2 x 20 header
SATA1, SATA2	Serial ATA1/2 connectors	
CFII	Type II CompactFlash™ connector	
DIMM1/2	200-pin DDR2 SODIMM sockets	
PCI	PCI slot	
PCIEX1	PCI-E by 1 slot	

2.3 Jumpers- Setting & Connectors description

2.3.1 LCD power setting select: JP1

PIN No.	Description
1-2	3.3V★
2-3	5V

2.3.2 Clear CMOS setting select: JP2

PIN No.	Description
1-2	Normal operation ★
2-3	Clear CMOS

2.3.3 Auto power on select: JP3

PIN No.	Description
1-2	Auto power on
Open	Disabled★

2.3.4 BIOS write protection setting: JP4

PIN No.	Description
1-2	Write-protection (Default) ★
2-3	Disable

2.3.5 Audio connector: CN1

PIN No.	Description
Blue	Line-in
Green	Speaker out
Pink	MIC-in

2.3.6 COM2/1 RS232 connectors: CN2

PIN No.	Description	PIN No.	Description
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground		

2.3.7 PS/2 mouse & keyboard connectors: CN3

PS/2 Mouse

PIN No.	Description
1	Mouse data
2	NC
3	Ground
4	+5V
5	Mouse clock
6	NC

PS/2 Keyboard

PIN No.	Description
1	Keyboard data
2	NC
3	Ground
4	+5V
5	Keyboard clock
6	NC

2.3.8 VGA / DVI Connector: CN4

VGA

PIN No.	Description	PIN No.	Description
1	Red Signal	9	+5V
2	Green Signal	10	Ground
3	Blue Signal	11	NC
4	NC	12	DCC_DATA
5	Ground	13	HSYNC
6	Ground	14	VSYNC
7	Ground	15	DCC_CLK
8	Ground		

DVI-D/DVI-I

PIN No.	Description	PIN No.	Description
1	TDC2#	13	NC
2	TDC2	14	DVI_5V
3	GND	15	GND
4	NC	16	DVI_DET
5	NC	17	TDC0#
6	SC_DDC	18	TDC0
7	SD_DDC	19	GND
8	NC	20	NC
9	TDC1#	21	NC
10	TDC1	22	GND
11	GND	23	TLC
12	NC	24	TLC#
C1	Red	C4	HSYNC
C2	Green	C5	Ground
C3	Blue		

2.3.9 LAN 1 + USB 0/1 & LAN 2 + USB 2/3 Connectors: CN6 & CN5

LAN 1/2

PIN No.	Description	PIN No.	Description
1	MDI0+	5	MDI2+
2	MDI0-	6	MDI2-
3	MDI1+	7	MDI3+
4	MDI1-	8	MDI3-

USB 0/1/2/3

PIN No.	Description	PIN No.	Description
1	+5 V (fused)	5	+5 V (fused)
2	USBP0-/2-	6	USBP1-/3-
3	USBP0+/2+	7	USBP1+/3+
4	Ground	8	Ground

2.3.10 Internal USB 4/5 & 6/7 Connectors: CN12 & CN11

Description	PIN No.	PIN No.	Description
VCC	1	2	VCC
USBP4-/6-	3	4	USBP5-/7-
USBP4+/6+	5	6	USBP5+/7+
Ground	7	8	Ground
NC	9	10	NC

Note :

1) If you are using a USB 2.0 device with Windows 2000/XP, you will need to install the USB 2.0 driver from the Microsoft® website. If you are using Service pack 1 (or later) for Windows® XP, and using Service pack4 (or later) for Windows® 2000, you will not have to install the driver.

2.3.11 External K/B & M/S Connector: CN7

PIN No.	Description
1	MS Clock
2	MS Data
3	KB Clock
4	KB Data
5	Ground
6	VCC

2.3.12 CD-In Connector: CN8

PIN No.	Description
1	CD-L
2	CD-Ground
3	CD-Ground
4	CD-R

2.3.13 Line out Connector: CN9

PIN No.	Description
1	LOUT_L
2	Ground
3	Ground
4	LOUT_R

2.3.14 LVDS Connector: CN10

Description	PIN.	PIN.	Description
NC	2	1	NC
Ground	4	3	Ground
LVDS_YAM1	6	5	LVDS_YAM0
LVDS_YAP1	8	7	LVDS_YAP0
Ground	10	9	Ground
LVDS_CLKAM	12	11	LVDS_YAM2
LVDS_CLKAP	14	13	LVDS_YAP2
Ground	16	15	Ground
LVDS_YBM0	18	17	NC0
LVDS_YBP0	20	19	NC
Ground	22	21	Ground
LVDS_YBM2	24	23	LVDS_YBM1
LVDS_YBP2	26	25	LVDS_YBP1
Ground	28	27	Ground
NC	30	29	LVDS_CLKBM
NC	32	31	LVDS_CLKBP
+12V	34	33	NC
+12V	36	35	NC
VCC_LCD	38	37	NC
VCC_LCD	40	39	LCD_BKL

2.3.15 System Fan Connector: CN14

PIN No.	Description
1	Ground
2	+12V
3	Fan Speed Control

2.3.16 CPU Fan Connector: CN15

PIN No.	Description
1	Ground
2	+12V
3	Fan Speed Control

2.3.17 ATX power Connector: CN16

PIN No.	Description	PIN No.	Description
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	Ground	13	Ground
4	+5V	14	PS-ON
5	Ground	15	Ground
6	+5V	16	Ground
7	Ground	17	Ground
8	NC	18	-5V
9	5VSB	19	+5V
10	+12V	20	+5V

2.3.18 COM3 / COM4 Connectors: CN18/CN19

Description	PIN	PIN	Description
DCD	1	2	DSR
RXD	3	4	RTS
TXD	5	6	CTS
DTR	7	8	RI
Ground	9	10	VCC

2.3.19 8-bit Digital I/O Connector: CN20 (ADE-6050 only)

Description	PIN No.	PIN No.	Description
EXT_VDD	1	2	I1
O1	3	4	I2
O2	5	6	I3
O3	7	8	I4
O4	9	10	EXT_VSS

2.3.20 Front Panel Connector: CN21

Description	PIN	PIN	Description
IRDA		**RESET**	
+5V	1	2	RESET+
NC	3	4	RESET-
IRRX	5	**SPEAKER**	
Ground	7	8	SPEAKER
IRTX	9	10	BUZZ
HDD LED		12	Ground
HDLED+	13	14	+5V
HDLED-	15	**PW_ LED**	
TB LED		18	PWLED+
NC	17	20	NC
Ground	19	22	PWLED-
PW_ON		**KB_LOCK**	
PWRBT+	23	24	KBLOCK
PWRBT-	25	26	Ground

2.3.21 Primary IDE Connector: IDE1

Description	PIN	PIN	Description
Reset IDE	1	2	Ground
Host Data 7	3	4	Host Data 8
Host Data 6	5	6	Host Data 9
Host Data 5	7	8	Host Data 10
Host Data 4	9	10	Host Data 11
Host Data 3	11	12	Host Data 12
Host Data 2	13	14	Host Data 13
Host Data 1	15	16	Host Data 14
Host Data 0	17	18	Host Data 15
Ground	19	20	---
DRQ 0	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Ground
DACK 0	29	30	Ground
IRQ 14	31	32	NC
Address 1	33	34	Ground
Address 0	35	36	Address 2
Chip Select 0	37	38	Chip Select 1
Activity	39	40	Ground

2.3.22 Serial ATA Connectors: SATA1, SATA2

PIN No.	Description
1	Ground
2	SATA_TX+
3	SATA_TX-
4	Ground
5	SATA_RX-
6	SATA_RX+
7	Ground

These SATA connectors support Serial ATA II. Each SATA connector can only support one serial ATA device.

Note: With most storage devices, there is a power cable that you need attach to a power source (power supply).

CHAPTER 3

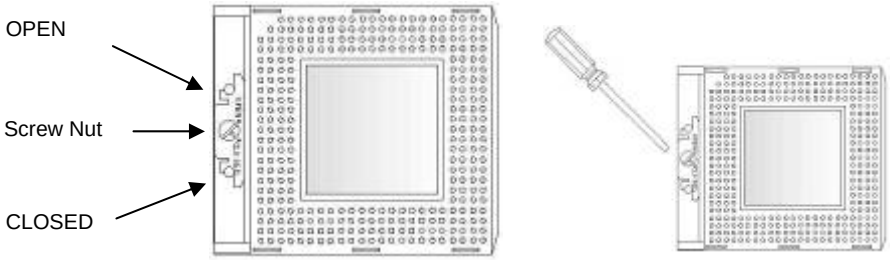
3. System Installation

This chapter provides you with instructions on how to setup your system. The additional information shows you how to install CPU / FAN and memory.

3.1 Socket 478 Processors

3.1.1 Installing CPU

- Check and confirm that you are going to install correctly CPU type and pin numbers.
- Take the screwdriver and releasing screw-nut of the socket 478.
- Rotate mark of screw-nut to face the "OPEN".
- Align the pins of the CPU against the pinholes of the socket 478. Be sure to pay attention to the orientation of the CPU.



- Push down the CPU into the socket 478.
- Rotate mark of screw-nut to face the "CLOSED".

Note: Do not force the CPU into the socket. It may bend the pins and damage the CPU.

3.2 Installing Cooling Fan

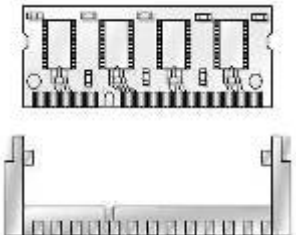
Warning： For a safety landing, avoid leaving prongs on hard surface.

Instructions： Smear thermal grease on the top of the CPU. Lower the CPU fan onto the CPU/CPU socket and secure it using the attachments or screws provided on the fan. Finally, attach the fan power cable to the CPUFAN adapter and be careful not to place the cable on the CPU cooling fan.

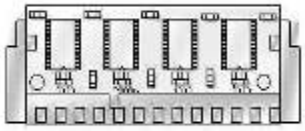
3.3 Main Memory

The figures display the notch marks and what they should look like on your SO-DIMM memory module.

SO-DIMM has 200-pins and two notches, that will match with the onboard SO-DIMM socket. Memory modules are installed by placing the chip firmly into the socket at a parallel angle and pressing straight down until it fits tightly into the SO-DIMM socket.



SO-DIMM Memory and 200-pins Socket



Memory Installation

NOTE: For maintaining system stability, do not change any of memory parameters in BIOS setup to upgrade your system performance without acquiring technical information.

3.4 Installations

To install the board into standard chassis or proprietary environment, you need to perform the following steps:

1. Check all jumpers setting on proper position
2. Install and configure CPU and memory module on right position
3. Place the board into the dedicated position in your system
4. Attach cables to existing peripheral devices and secure it

CHAPTER 4

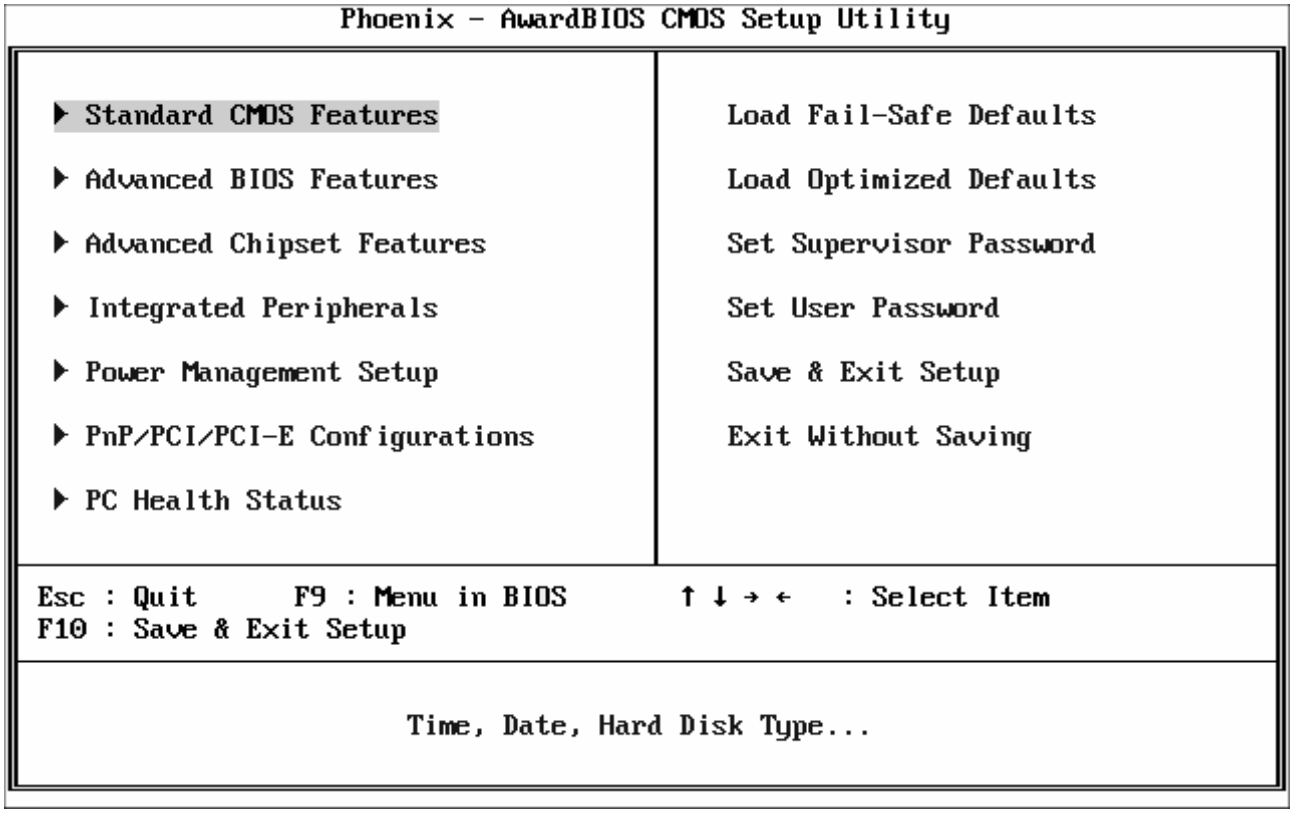
4. BIOS Setup

4.1 Entering Setup

PHOENIX-AWARD™ has a built-in setup program that allows users to modify the basic system configuration. This information is stored in CMOS RAM whose power is supplied by a battery so that it can retain the setup information even when the power is turned off. Press the key "Delete" when you Power on or Reboot the computer system. (i.e. After the logo appears at the center of the screen, please press Delete to enter the BIOS setup program). In the BIOS, make sure that everything is working fine before you try to optimize it for maximum performance.

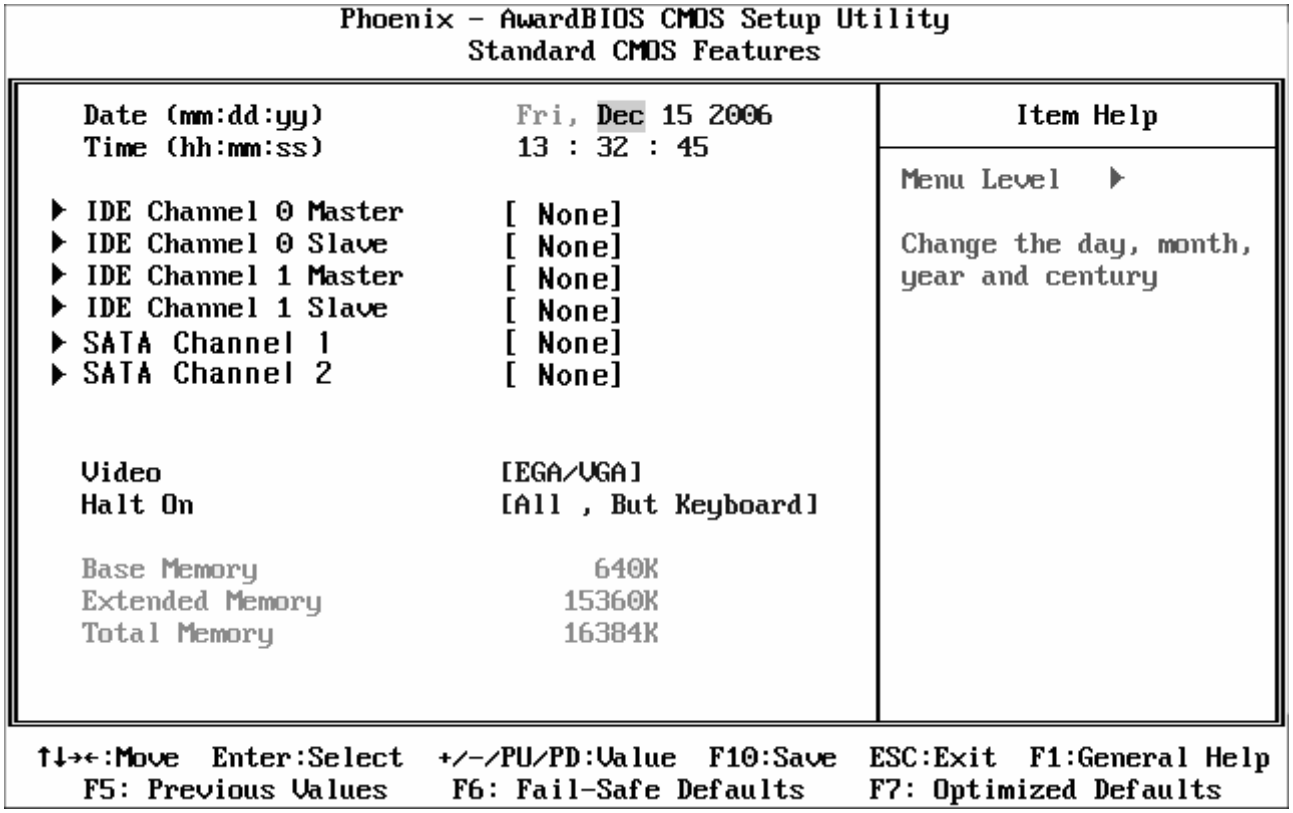
It is possible for the CMOS battery to fail, this will cause data loss in the CMOS only. If this does happen you will need to reconfigure your BIOS settings.

4.2 Main Menu



When you enter the PHOENIX-AWARD™ CMOS Setup Utility, the **Main** will appear on the screen. The Main allows you to select several configuration options. Use the left/right arrow keys to highlight a particular configuration screen from the top menu bar or use the down arrow key to access and configure the information below.

4.2.1 Standard CMOS Features


Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features
Date (mm:dd:yy) Fri, Dec 15 2006
Time (hh:mm:ss) 13 : 32 : 45
IDE Channel 0 Master [None]
IDE Channel 0 Slave [None]
IDE Channel 1 Master [None]
IDE Channel 1 Slave [None]
SATA Channel 1 [None]
SATA Channel 2 [None]
Video [EGA/VGA]
Halt On [All , But Keyboard]
Base Memory 640K
Extended Memory 15360K
Total Memory 16384K
Item Help
Menu Level ▶
Change the day, month, year and century
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

4.2.1.1 Date (mm/date/year):

Set the system date. Note that the 'Day' automatically changes when you set the date.

4.2.1.2 Time (hh/mm/ss):

Set the system time.

4.2.1.3 IDE Channel 0 / 1 Master:

Press <Enter> to enter the sub menu of detailed options.

4.2.1.4 IDE Channel 0 / 1 Slave:

Press <Enter> to enter the sub menu of detailed options.

4.2.1.5 SATA Channel 1 / 2:

Press <Enter> to enter the sub menu of detailed options.

4.2.1.6 Video:

It allows you to select the type of displaying standard you are using.

The Choice: EGA/VGA/CGA 40/CGA 80/MONO.

4.2.1.7 Halt On:

Select the situation in which you want the BIOS to stop the POST process and notify you.

The Choice: All Errors/No Errors/All, but Keyboard/All, but Diskette/All, but Disk/Key.

4.2.1.8 Base Memory:

Displays the amount of conventional memory detected during boot up.

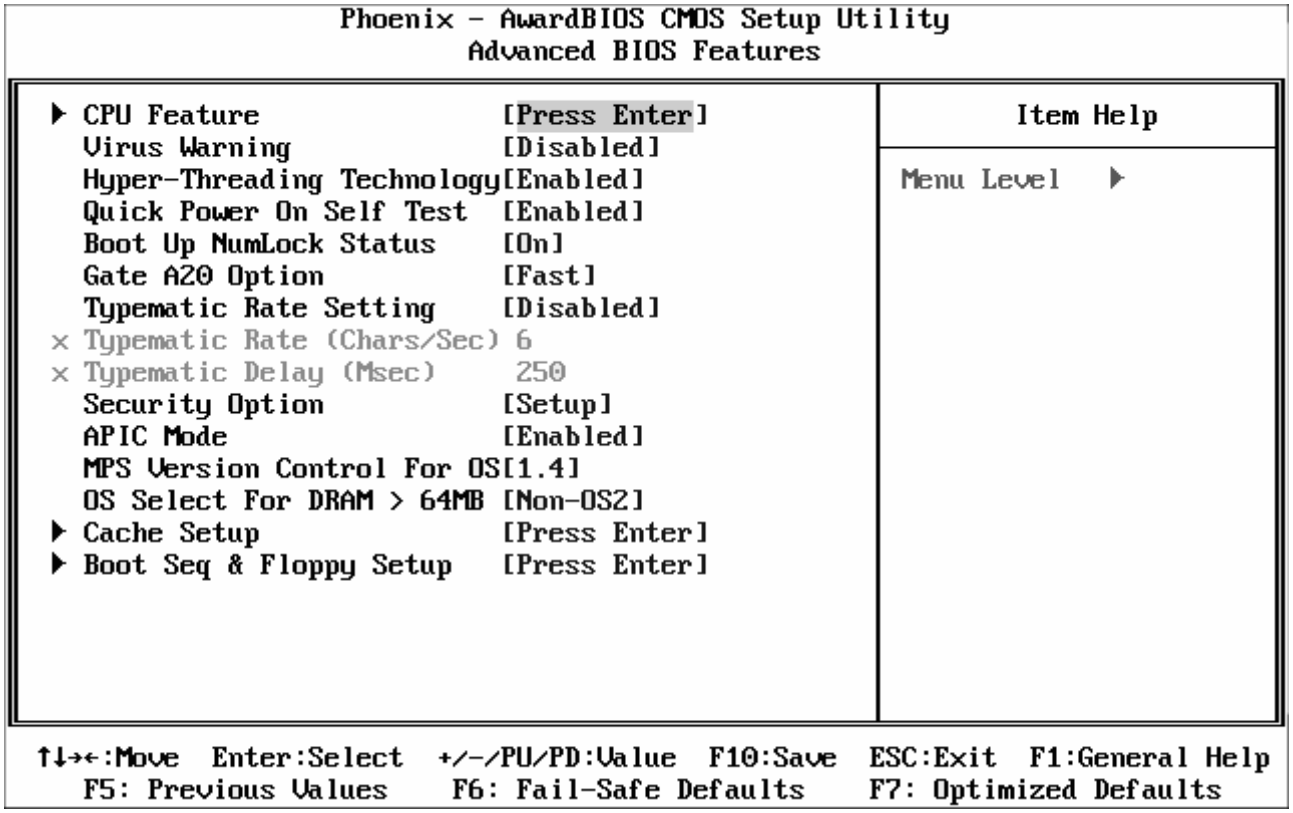
4.2.1.9 Extended Memory:

Displays the amount of extended memory detected during boot up.

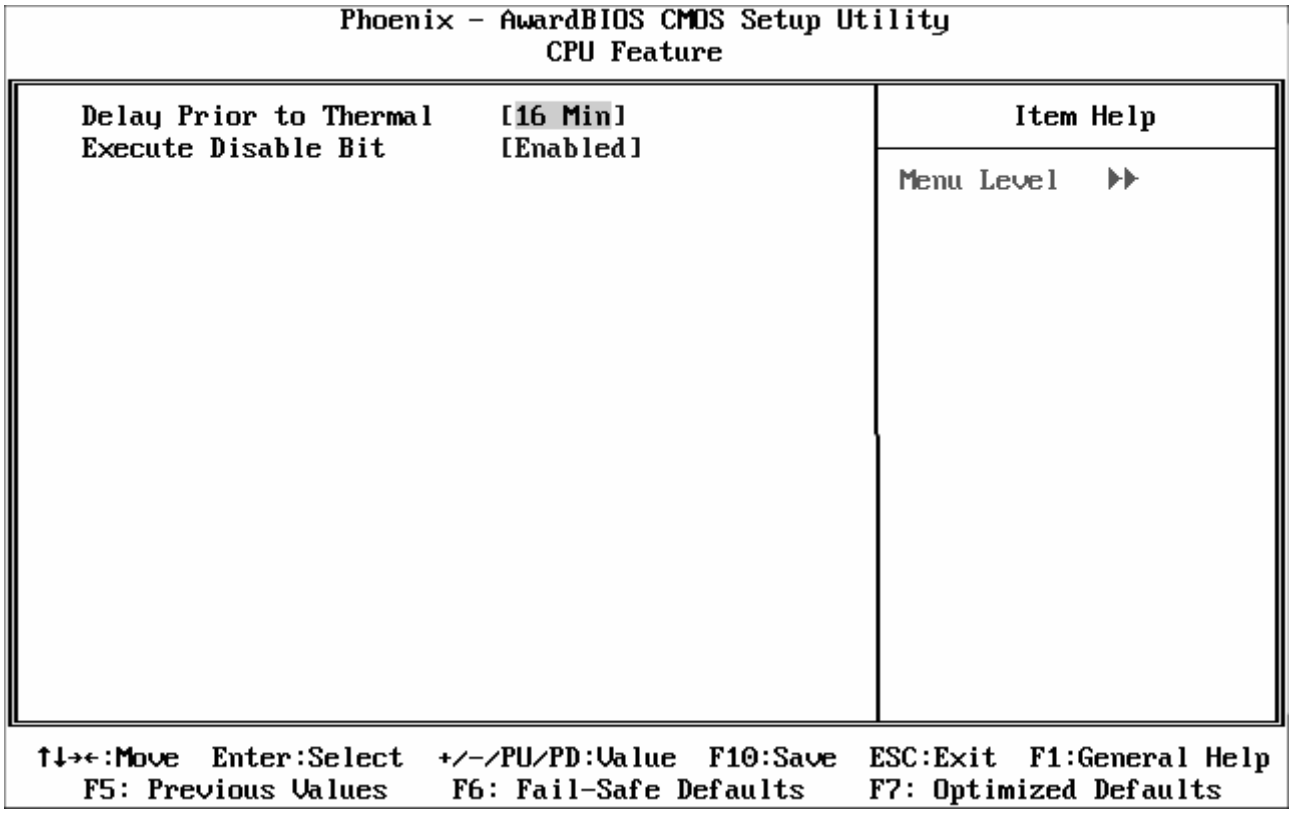
4.2.1.10 Total Memory:

Displays the total memory available in the system.

4.2.2 Advanced BIOS Features


Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features
▶ CPU Feature [Press Enter]
Virus Warning [Disabled]
Hyper-Threading Technology [Enabled]
Quick Power On Self Test [Enabled]
Boot Up NumLock Status [On]
Gate A20 Option [Fast]
Typematic Rate Setting [Disabled]
× Typematic Rate (Chars/Sec) 6
× Typematic Delay (Msec) 250
Security Option [Setup]
APIC Mode [Enabled]
MPS Version Control For OS [1.4]
OS Select For DRAM > 64MB [Non-OS2]
▶ Cache Setup [Press Enter]
▶ Boot Seq & Floppy Setup [Press Enter]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

4.2.2.1 CPU Feature


Phoenix - AwardBIOS CMOS Setup Utility
CPU Feature
Delay Prior to Thermal [16 Min]
Execute Disable Bit [Enabled]
Item Help
Menu Level ▶▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

4.2.2.1.1 Delay Prior to Thermal:

Select this item allows the delay prior to thermal time.

The Choice: Auto, 4, 8, 16, 32Min.

4.2.2.1.2 Execute Disable Bit:

Select when disable, forces the XD feature flag to always return 0.

The choice: Enabled, Disabled.

4.2.2.2 Virus Warning:

Allow you to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempts to write data into this area, BIOS will show a warning message on screen and alarm beep.

The choice: Enabled, Disabled.

4.2.2.3 Hyper-Threading Technology:

When you install a CPU featuring Hyper-Threading Technology, this item will allow you to enable or disable the Hyper-Threading technology.

The choice: Enabled, Disabled.

4.2.2.4 Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power up the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

The choice: Enabled, Disabled.

4.2.2.5 Boot Up NumLock Status

Select power on state for NumLock.

The choice: On, Off.

4.2.2.6 Gate A20 Option

Select if chipset or keyboard controller should control GateA20.

The choice: Normal, Fast.

4.2.2.7 Typematic Rate Setting

Keystrokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected.

The choice: Enabled, Disabled.

4.2.2.8 Typematic Rate (Chars/Sec)

Sets the number of times a second to repeat a keystroke when you hold the key down.

The choice: 6, 8, 10, 12, 15, 20, 24 and 30.

4.2.2.9 Typematic Delay (Msec)

Sets the delay time after the key is held down before it begins to repeat the keystroke.

The choice: 250, 500, 750 and 1000.

4.2.2.10 Security Option

Select whether the password is required every time the system boots or only when you enter setup.

The choice: System, Setup.

4.2.2.11 APIC Mode

This item allows you to enable or disable APIC Mode.

The choice: Enabled, Disabled.

4.2.2.12 MPS Version Control For OS

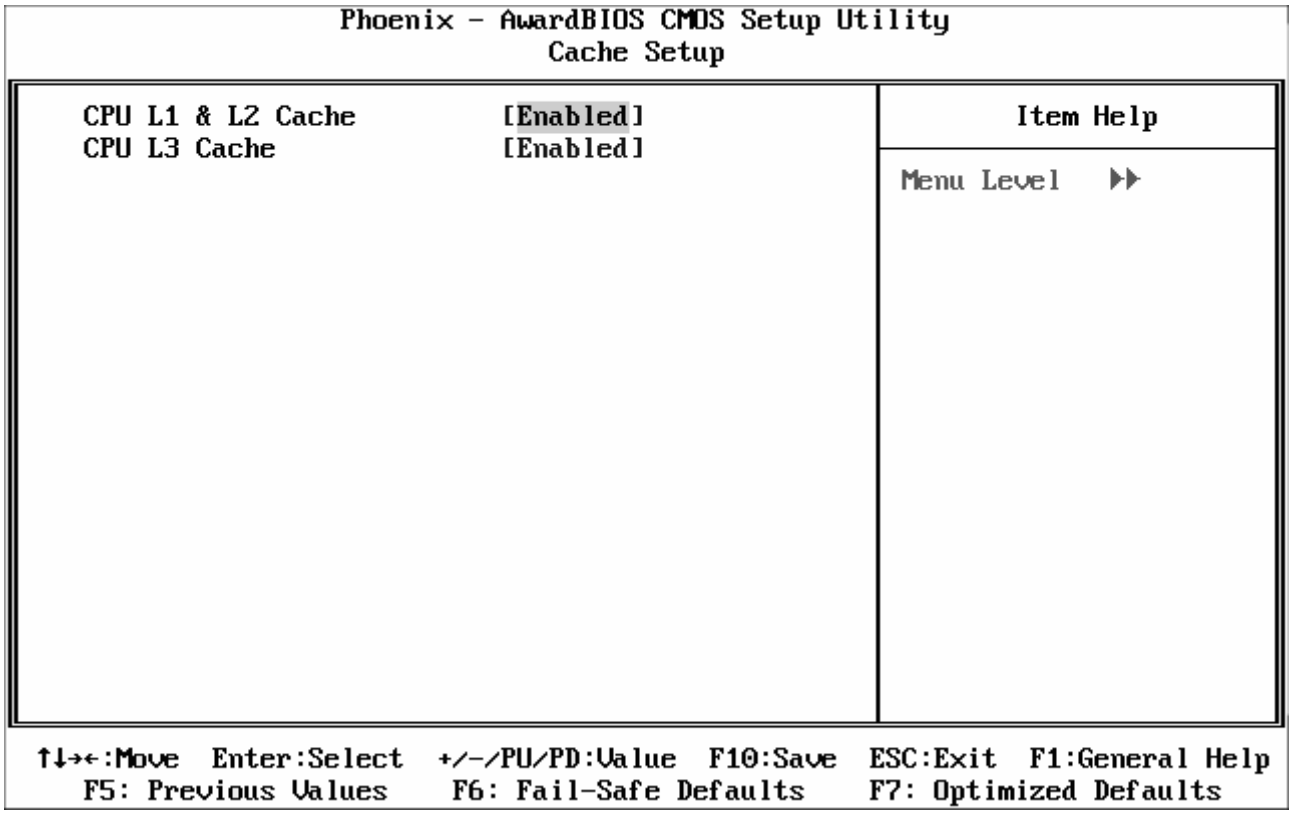
Select the operating system that is Multi-Processors Version Control for OS.

The choice: 1.4, 1.1.

4.2.2.13 OS Select For DRAM > 64MB

Select the operating system that is running with greater than 64MB of RAM on the system.
The choice: Non-OS2, OS2.

4.2.2.14 Cache Setup


Phoenix - AwardBIOS CMOS Setup Utility
Cache Setup
CPU L1 & L2 Cache [Enabled]
CPU L3 Cache [Enabled]
Item Help
Menu Level ▶▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

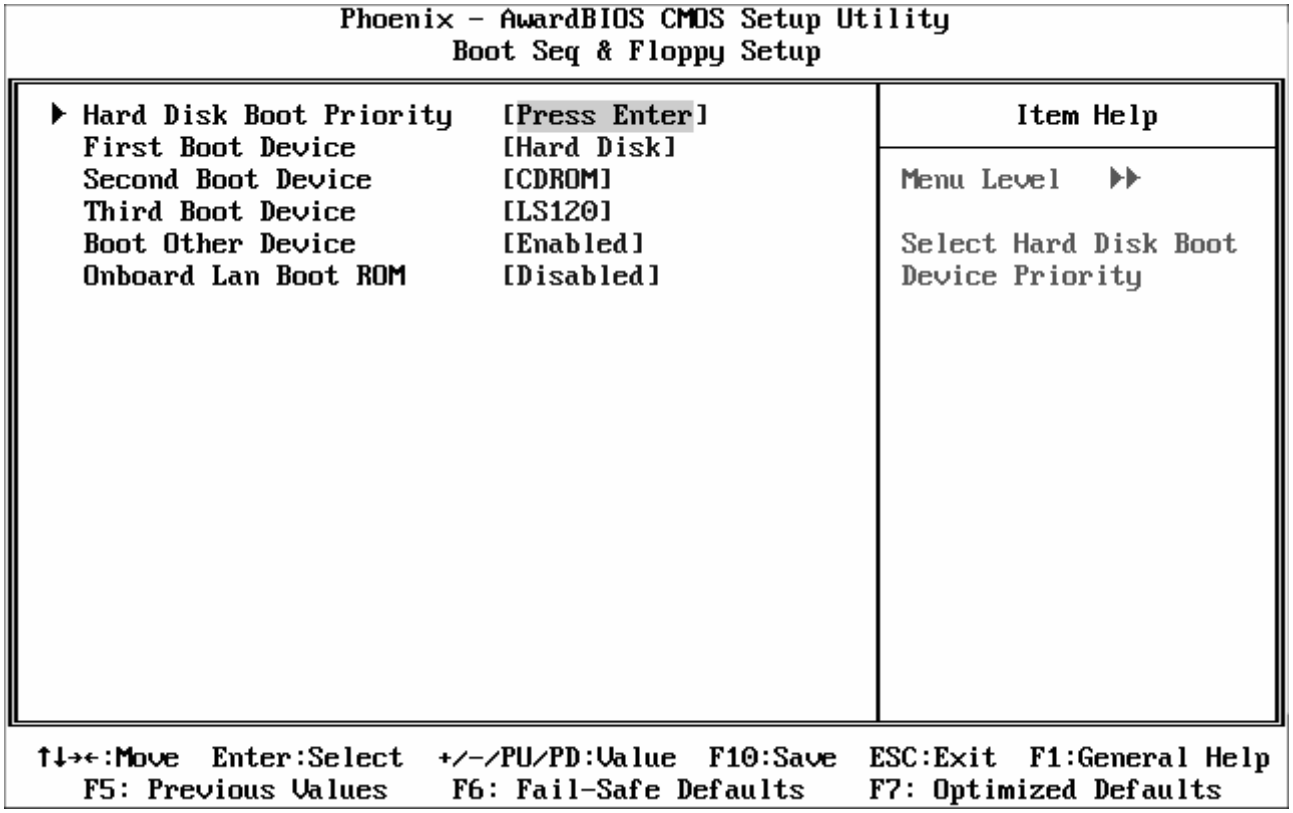
4.2.2.14.1 CPU L1& L2 Cache

These two categories speed up memory access. However, it depends on CPU/chipset design.
The choice: Enabled, Disabled.

4.2.2.14.2 CPU L3 Cache

The option enables Level 3 cache memory. However, it depends on CPU/chipset design.
The choice: Enabled, Disabled.

4.2.2.15 Boot Seq & Floppy Setup


Phoenix - AwardBIOS CMOS Setup Utility
Boot Seq & Floppy Setup
Hard Disk Boot Priority [Press Enter]
First Boot Device [Hard Disk]
Second Boot Device [CDROM]
Third Boot Device [LS120]
Boot Other Device [Enabled]
Onboard Lan Boot ROM [Disabled]
Item Help
Menu Level ▶▶
Select Hard Disk Boot Device Priority
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

4.2.2.15.1 Hard Disk Boot Priority

Press Enter and It shows Bootable add-in Card.

4.2.2.15.2 First/Second/Third Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

The choice: Floppy, LS/ZIP, HDD, SCSI, CDROM, LAN and Disabled.

4.2.2.15.3 Boot Other Device

When enabled, the system searches all other possible locations for an operating system if it fails to find one in the devices specified under the first, second, and third boot devices.

The Choice: Enabled, Disabled.

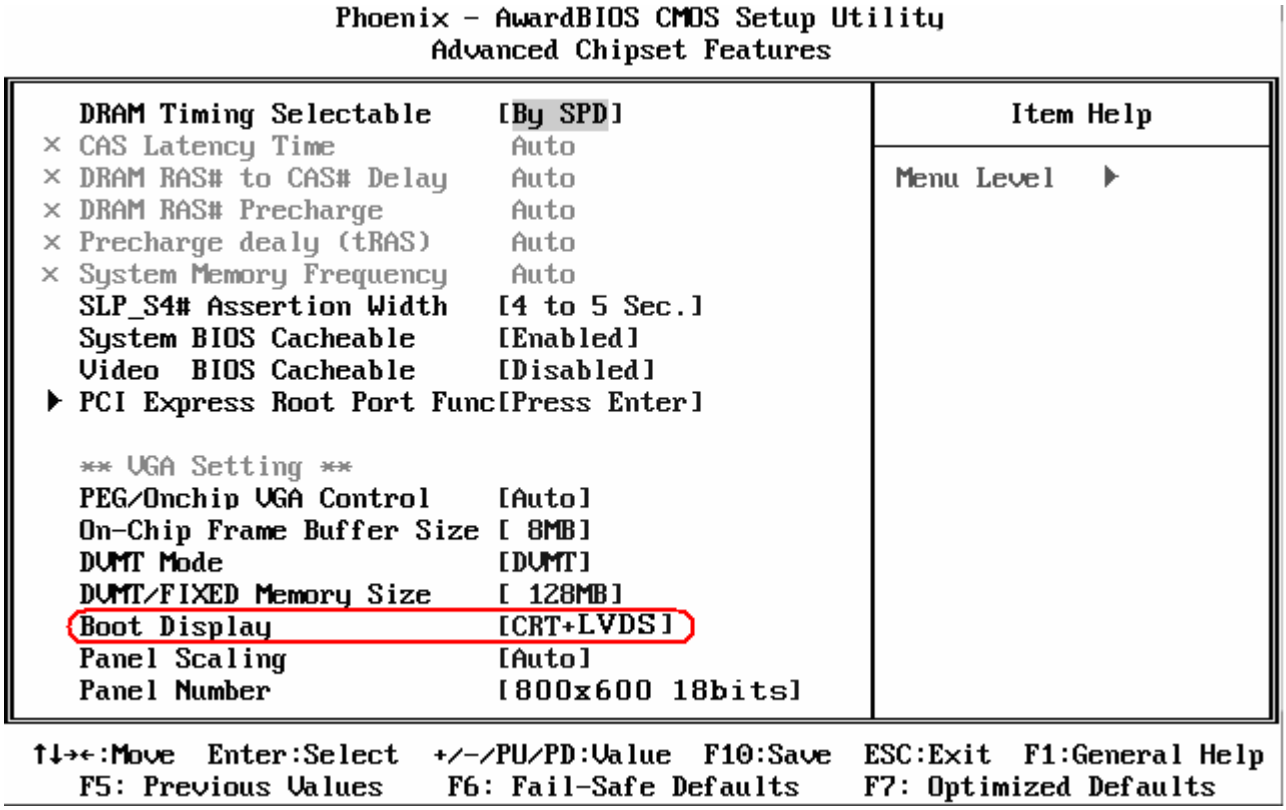
4.2.2.15.4 Onboard LAN Boot ROM

Select "Enabled" if your system has a LAN device installed on the system board and you wish to use it.

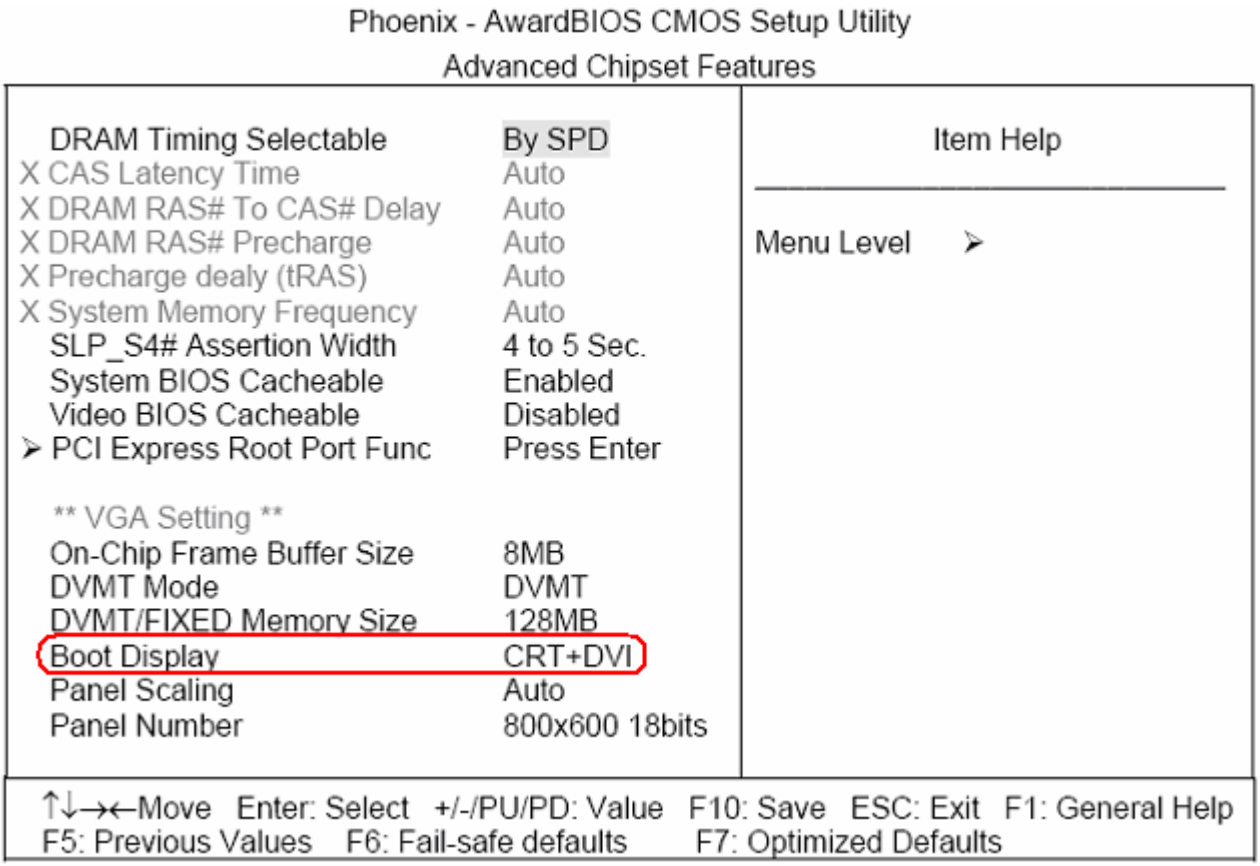
The Choice: Enabled, Disabled.

4.2.3 Advanced Chipset Features

For ADE-6050


Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features
DRAM Timing Selectable [By SPD]
× CAS Latency Time Auto
× DRAM RAS# to CAS# Delay Auto
× DRAM RAS# Precharge Auto
× Precharge dealy (tRAS) Auto
× System Memory Frequency Auto
SLP_S4# Assertion Width [4 to 5 Sec.]
System BIOS Cacheable [Enabled]
Video BIOS Cacheable [Disabled]
PCI Express Root Port Func [Press Enter]
** VGA Setting **
PEG/Onchip VGA Control [Auto]
On-Chip Frame Buffer Size [8MB]
DVMT Mode [DVMT]
DVMT/FIXED Memory Size [128MB]
Boot Display [CRT+LVDS]
Panel Scaling [Auto]
Panel Number [800x600 18bits]
Item Help
Menu Level
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

For ADE-6052


Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features
DRAM Timing Selectable By SPD
X CAS Latency Time Auto
X DRAM RAS# To CAS# Delay Auto
X DRAM RAS# Precharge Auto
X Precharge dealy (tRAS) Auto
X System Memory Frequency Auto
SLP_S4# Assertion Width 4 to 5 Sec.
System BIOS Cacheable Enabled
Video BIOS Cacheable Disabled
PCI Express Root Port Func Press Enter
** VGA Setting **
On-Chip Frame Buffer Size 8MB
DVMT Mode DVMT
DVMT/FIXED Memory Size 128MB
Boot Display CRT+DVI
Panel Scaling Auto
Panel Number 800x600 18bits
Item Help
Menu Level
↑↓→←Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-safe defaults F7: Optimized Defaults

4.2.3.1 DRAM Timing Selectable

Select the operating system that is selecting DRAM timing, so select SPD for setting SDRAM timing by SPD.
The Choice: Manual, By SPD.

4.2.3.2 CAS Latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing.

4.2.3.3 DRAM RAS# to CAS# Delay

The system board designer should set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU. This field is locked when "DRAM Timing Selectable" is set to "By SPD" and is automatically determined by the system.
The choice: Auto, 5, 4, 3, 2.

4.2.3.4 DRAM RAS# Precharge

If an insufficient number of cycles are allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be incomplete and the DRAM may fail to retain data. Fast gives faster performance; and Slow gives more stable performance. This field applies only when synchronous DRAM is installed in the system.

4.2.3.5 Precharge Delay (tRAS)

Select the operating system that is active to precharge delay.

4.2.3.6 System Memory Frequency

You can use this item to select operating frequency for the main system memory.

4.2.3.7 SLP_S4# Assertion Width

The item allows you to select the assertion width of SLP_S4#
The choice: 4 to 5 Sec, 3 to 4 Sec, 2 to 3 Sec, 1 to 2 Sec.

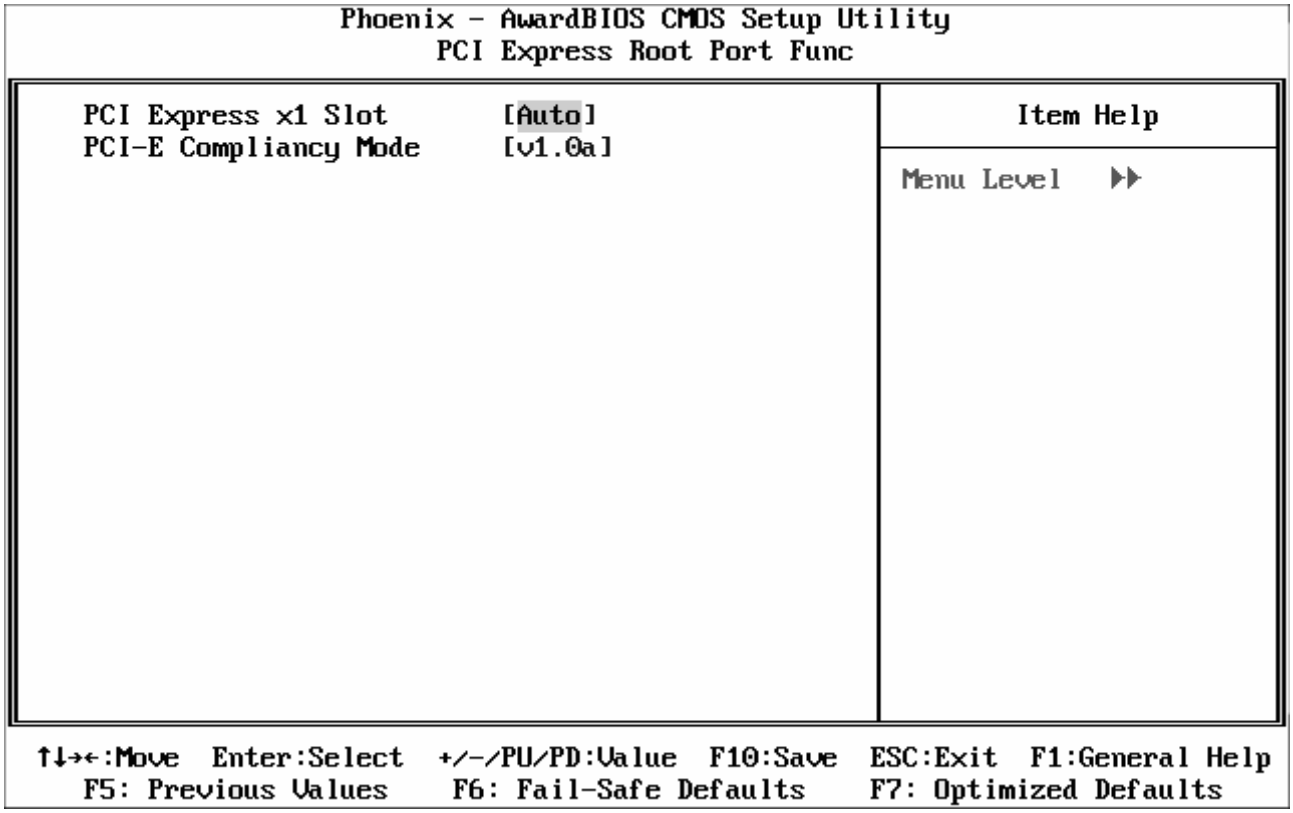
4.2.3.8 System BIOS Cacheable

Selecting "Enabled" allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.
The choice: Enabled, Disabled.

4.2.3.9 Video BIOS Cacheable

Select "Enabled" allows caching of the video BIOS, resulting in better system performance. However, if any program writes to this memory area, a system error may result.
The choice: Enabled, Disabled.

4.2.3.10 PCI Express Root Port Function


Phoenix - AwardBIOS CMOS Setup Utility
PCI Express Root Port Func
PCI Express x1 Slot [Auto]
PCI-E Compliancy Mode [v1.0a]
Item Help
Menu Level ▶▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

4.2.3.10.1 PCI Express x1 Slot

This item allows you to active PCI Express.

The choice: Auto, Enabled, Disabled.

4.2.3.10.2 PCI-E Compliancy Mode

This item allows you to choose PCI-E Compliancy Mode.

The choice: v1.0a, v1.0.

4.2.3.11 PEG/Onchip VGA Control

This item allows you to control the PEG or on-chip VGA.

The choice: Onchip VGA, PEG Port, Auto.

4.2.3.12 On-Chip Frame Buffer Size

Select this item allows you to control the on-chip frame buffer size.

4.2.3.13 DVMT Mode

This item allows you to select the DVMT mode.

The choice: FIXED, DVMT, BOTH.

4.2.3.14 DVMT/FIXED Memory Size

This item allows you to select the DVMT or FIXED memory size.

4.2.3.15 Boot Display

This item allows you to select the boot display device.

4.2.3.16 Panel Scaling

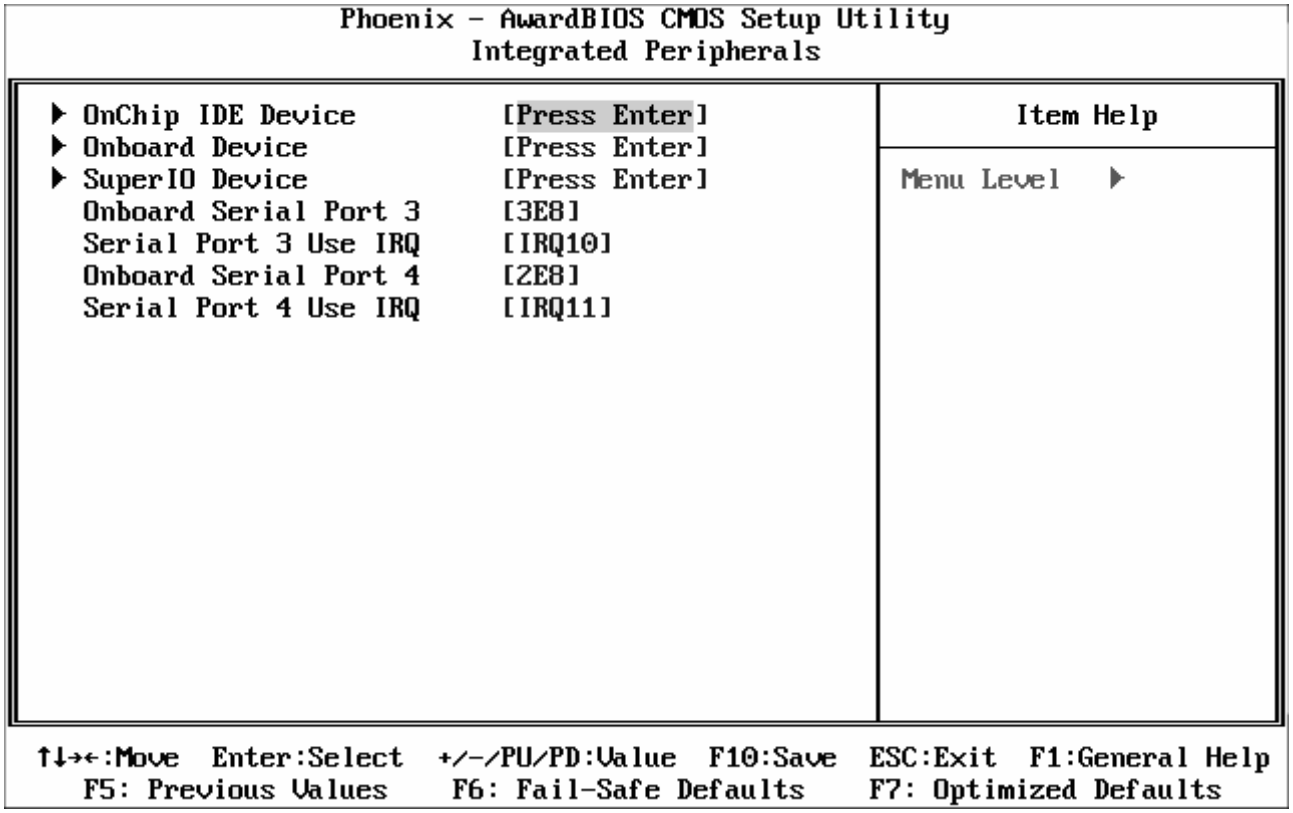
This item allows you to enable or disable the Scaling function.

The choice: AUTO, ON, OFF.

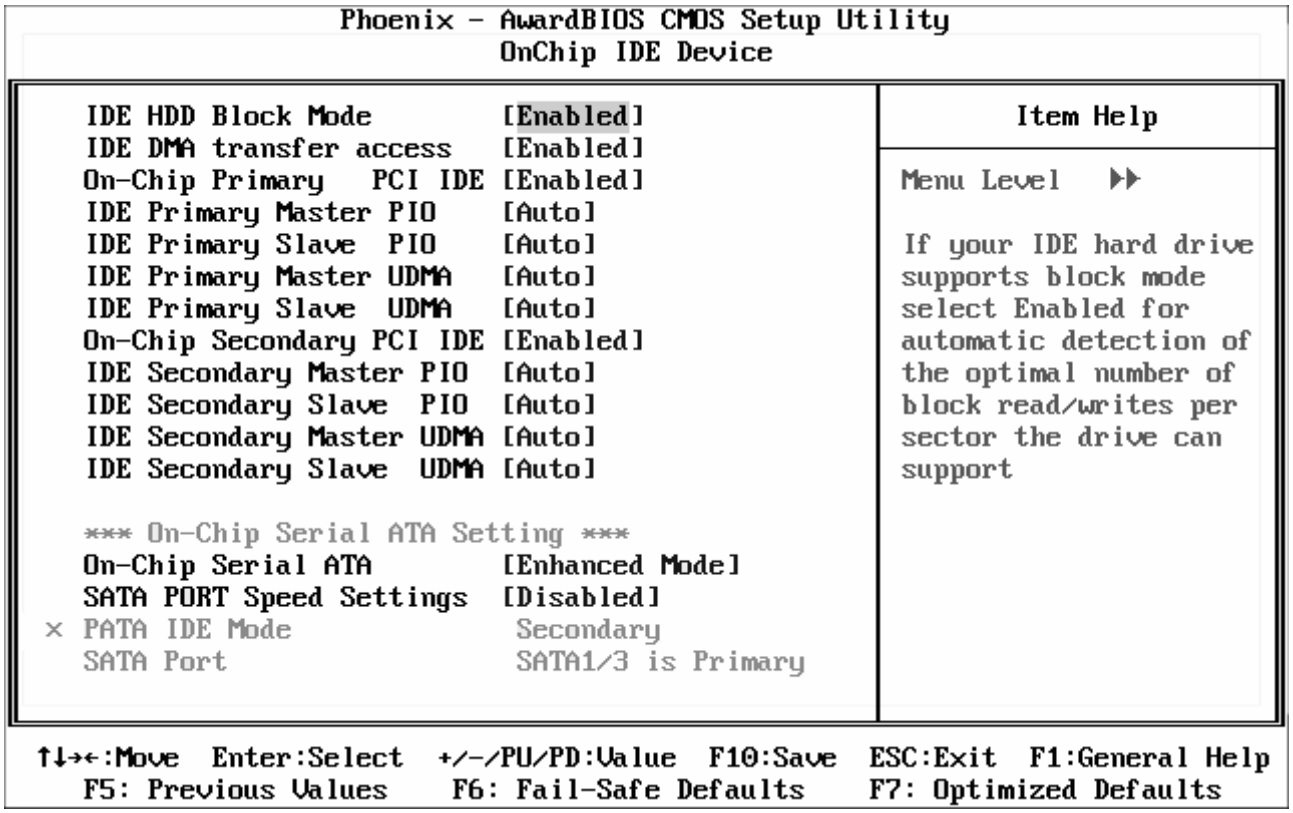
4.2.3.17 Panel Number

This item allows you to select the panel resolution that will be displayed depending on the LCD panel (LFP).

4.2.4 Integrated Peripheral


Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals
▶ OnChip IDE Device [Press Enter]
▶ Onboard Device [Press Enter]
▶ SuperIO Device [Press Enter]
Onboard Serial Port 3 [3E8]
Serial Port 3 Use IRQ [IRQ10]
Onboard Serial Port 4 [2E8]
Serial Port 4 Use IRQ [IRQ11]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

4.2.4.1 Onchip IDE Device


Phoenix - AwardBIOS CMOS Setup Utility
OnChip IDE Device
IDE HDD Block Mode [Enabled]
IDE DMA transfer access [Enabled]
On-Chip Primary PCI IDE [Enabled]
IDE Primary Master PIO [Auto]
IDE Primary Slave PIO [Auto]
IDE Primary Master UDMA [Auto]
IDE Primary Slave UDMA [Auto]
On-Chip Secondary PCI IDE [Enabled]
IDE Secondary Master PIO [Auto]
IDE Secondary Slave PIO [Auto]
IDE Secondary Master UDMA [Auto]
IDE Secondary Slave UDMA [Auto]
*** On-Chip Serial ATA Setting ***
On-Chip Serial ATA [Enhanced Mode]
SATA PORT Speed Settings [Disabled]
× PATA IDE Mode Secondary
SATA Port SATA1/3 is Primary
Item Help
Menu Level ▶▶
If your IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

4.2.4.2.1. IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

The choice: Enabled, Disabled.

4.2.4.2.2. IDE DMA Transfer Access

This item could allows you to enabled/disabled the IDE UDMA transfer function and only use PIO mode.

The choice: Enabled, Disabled.

4.2.4.2.3. On-Chip Primary/Secondary PCI IDE

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select "Enabled" to activate each channel separately.

The choice: Enabled, Disabled.

4.2.4.2.4. IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3 and Mode 4.

4.2.4.2.5. IDE Primary/Secondary Master/Slave UDMA

Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33, select "Auto" to enable BIOS support.

The choice: Auto, Disabled.

4.2.4.2.6. On-Chip Serial ATA

There are five Serial ATA fields let you set the Serial ATA.

The choice: Disabled---Disabled SATA Controller.

Auto---Auto arrange by BIOS.

SATA Only---SATA is operating in legacy mode.

Combined Mode---PATA and SATA are combined. Max. of 2 IDE drives in each channel.

Enhanced Mode---Enable both SATA and PATA.

Max. of 4 IDE drives are supported.

4.2.4.2.7. SATA Ports Speed Settings

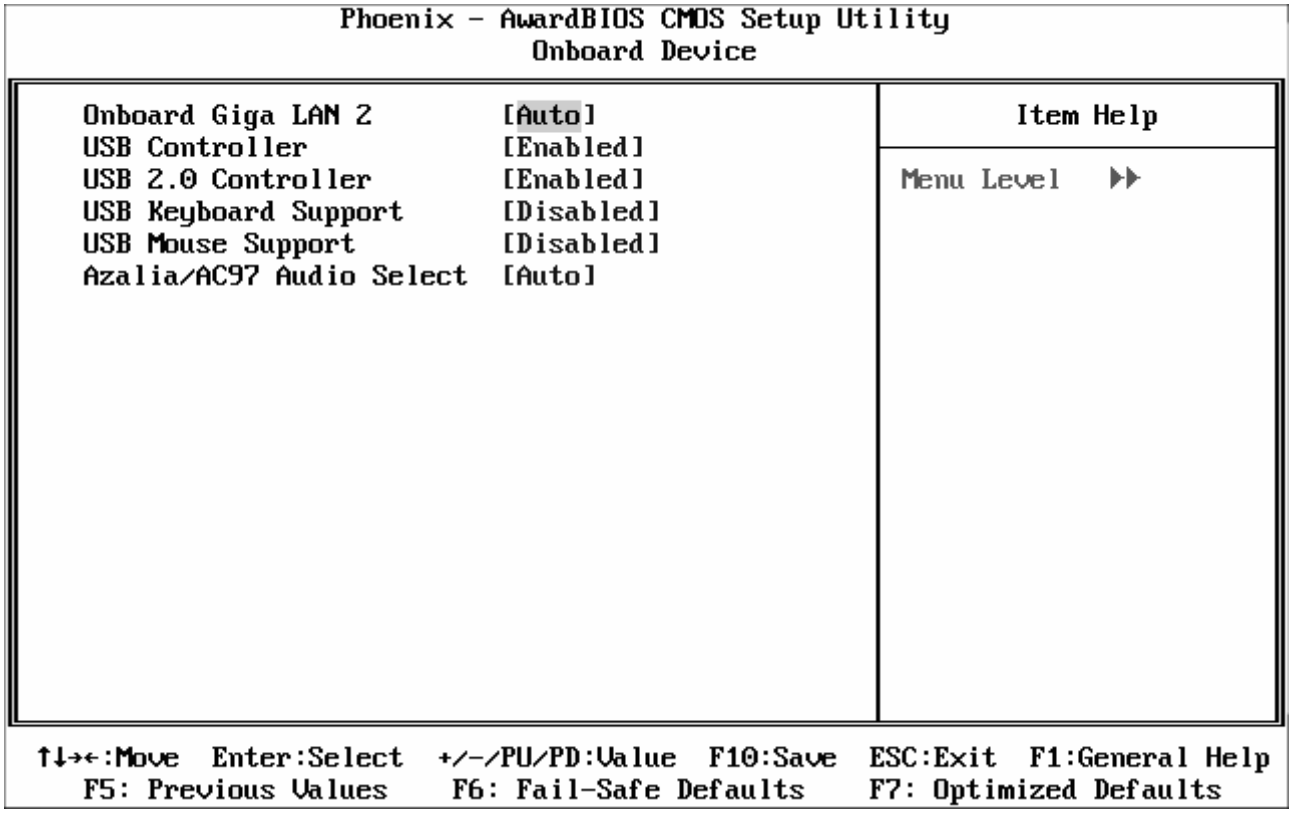
This item allows you set the SATA Ports Speed.

The choice: Disabled, Force GEN I, Force GEN II.

4.2.4.2.8. PATA IDE Mode

This function allows to select PATA IDE mode.

4.2.4.2 Onboard Device


Phoenix - AwardBIOS CMOS Setup Utility
Onboard Device
Onboard Giga LAN 2 [Auto]
USB Controller [Enabled]
USB 2.0 Controller [Enabled]
USB Keyboard Support [Disabled]
USB Mouse Support [Disabled]
Azalia/AC97 Audio Select [Auto]
Item Help
Menu Level ▶▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

4.2.4.2.1. Onboard Giga Lan 2

Select "Enabled" if your system has a LAN device installed on the system board and you wish to use it.

The choice: Auto, Enabled, Disabled.

4.2.4.2.2. USB Controller

Select "Enabled" if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals.

The choice: Enabled, Disabled.

4.2.4.2.3. USB 2.0 Controller

Select "Enabled" if your system contains a Universal Serial Bus 2.0 (USB 2.0) controller and you have USB peripherals.

The choice: Enabled, Disabled.

4.2.4.2.4. USB Keyboard Support

Select "Enabled" if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

The choice: Enabled, Disabled.

4.2.4.2.5. USB Mouse Support

Select “Enabled” if your system contains a Universal Serial Bus (USB) controller and you have a USB mouse.

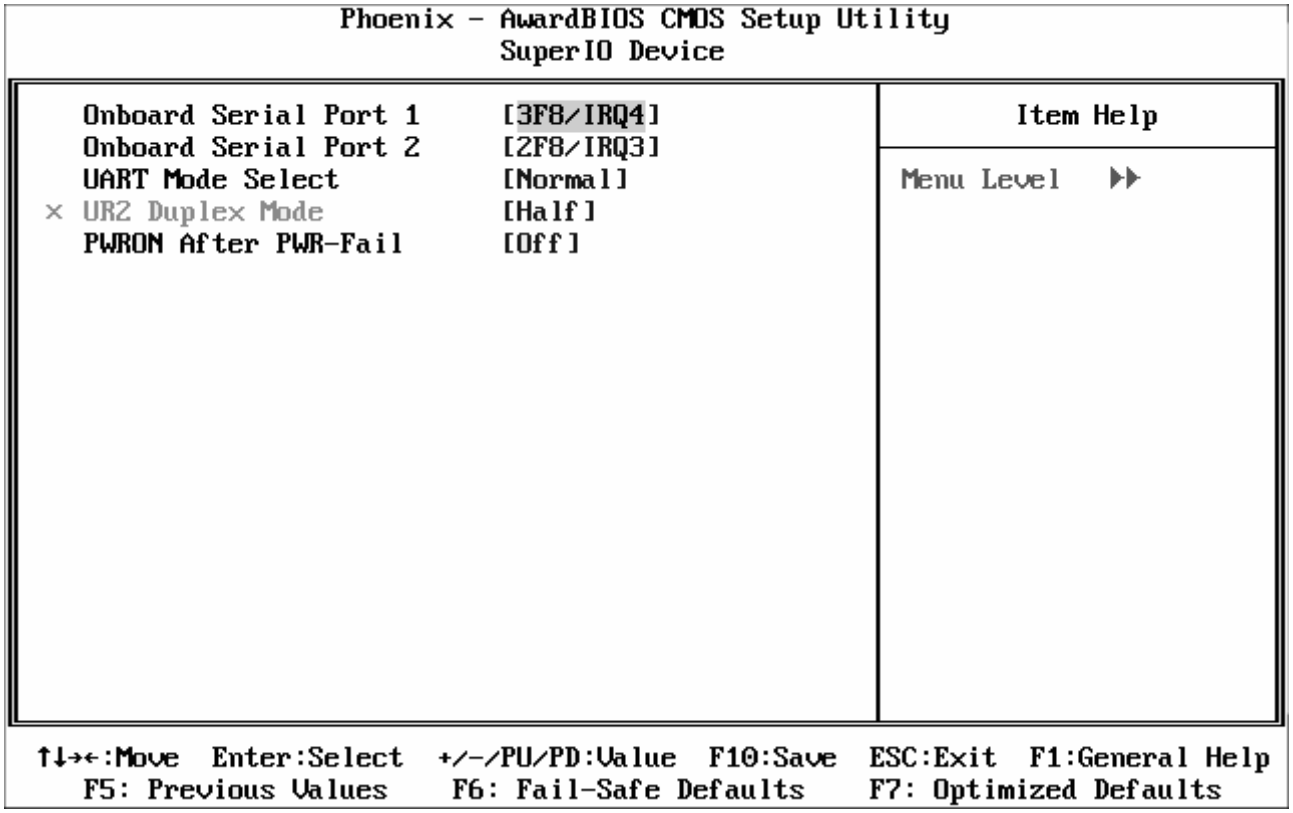
The choice: Enabled, Disabled.

4.2.4.2.6. Azalia/AC97 Audio Select

This item allows you to select the chipset family to support AC97 Audio

The choice: Auto, Azalia, AC97 Audio only, All disabled.

4.2.4.3 Super IO Device


Phoenix - AwardBIOS CMOS Setup Utility
SuperIO Device
Onboard Serial Port 1 [3F8/IRQ4]
Onboard Serial Port 2 [2F8/IRQ3]
UART Mode Select [Normal]
× UR2 Duplex Mode [Half]
PWRON After PWR-Fail [Off]
Item Help
Menu Level ▶▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

4.2.4.2.1. Onboard Serial Port 1/2

Select an address and corresponding interrupt for the first and second serial ports.
The choice: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled and Auto.

4.2.4.2.2. UART Mode Select

This item allows you to determine which Infra Red (IR) function of onboard I/O chip.
The Choice: Normal, IrDA and ASKIR

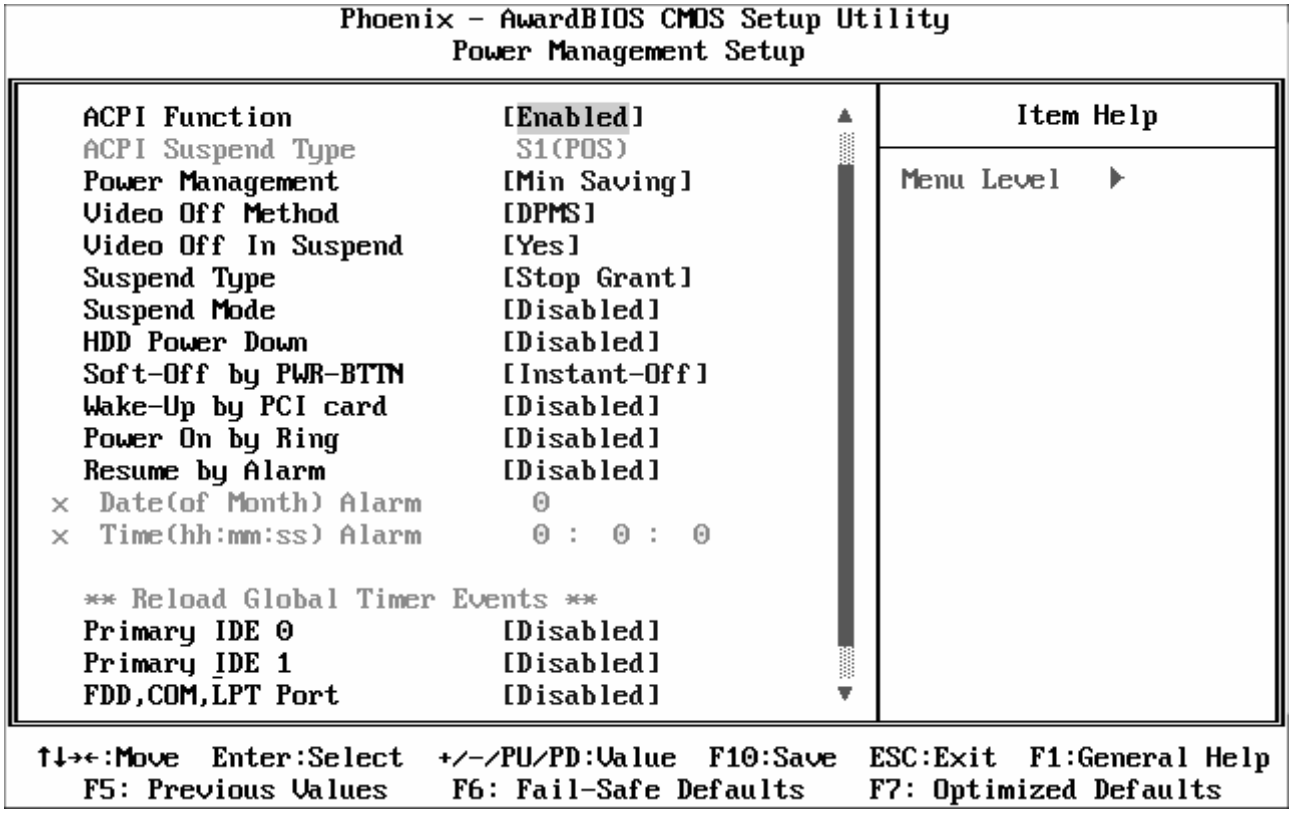
4.2.4.2.3. UR2 Duplex Mode

Select the value required by the IR device connected to the IR port. Full-duplex mode permits simultaneous two-direction transmission. Half-duplex mode permits transmission in one direction only at a time.
The choice: Half, Full.

4.2.4.2.4. PWRON After PWR-Fail

This item allows you to select if you want to power on the system after power failure.
The choice: Off, On and Former-Sts.

4.2.5 Power Management Setup


Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup
ACPI Function [Enabled]
ACPI Suspend Type S1(POS)
Power Management [Min Saving]
Video Off Method [DPMS]
Video Off In Suspend [Yes]
Suspend Type [Stop Grant]
Suspend Mode [Disabled]
HDD Power Down [Disabled]
Soft-Off by PWR-BTTN [Instant-Off]
Wake-Up by PCI card [Disabled]
Power On by Ring [Disabled]
Resume by Alarm [Disabled]
× Date(of Month) Alarm 0
× Time(hh:mm:ss) Alarm 0 : 0 : 0
** Reload Global Timer Events **
Primary IDE 0 [Disabled]
Primary IDE 1 [Disabled]
FDD,COM,LPT Port [Disabled]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

4.2.5.1 ACPI Function

This function enables PCs to implement Power Management functions through Operating System and also provides the opportunity to integrated the interface for controlling power management and Plug-n-Play features on system devices.

4.2.5.2 ACPI Suspend Type

When ACPI function is Enabled, ACPI Suspend Type will be supported S1. In S1 the computer consumes less power because HDDs and some other devices are powered off, but CPU is still running and it requires its fan to rotate.

4.2.5.3 Power Management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

1. HDD Power Down, 2. Doze Mode, 3. Suspend Mode

Min. Power Saving: Minimum power management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.

Max. Power Saving: Maximum power management -- **ONLY AVAILABLE FOR SL CPU's**. Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.

User Defined: Allow you to set each mode individually. When not disabled, each of the ranges is from 1 min. to 1 hr. except for HDD Power Down, which ranges from 1 min. to 15 min. and disable.

4.2.5.4 Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank: This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.

Blank Screen: This option only writes blanks to the video buffer.

DPMS: Initial display power management signaling.

4.2.5.5 Video Off In Suspend

This item allows you to on/off Method function.
The choice: Yes, No.

4.2.5.6 Suspend Type

Select the Suspend Type.

The choice: PwrOn Suspend, Stop Grant.

4.2.5.7 Suspend Mode

When "Enabled" and after the set time of system inactivity. All devices except the CPU will be shut off.

The choice: Disabled, 1, 2, 4, 8, 12, 20, 30, 40 Min and 1Hour.

4.2.5.8 HDD Power Down

When "Enabled" and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

The choice: Disabled, 1~15Min.

4.2.5.9 Sort-Off by PWR-BTTN

Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system has "hung.

The choice: Delay 4 Sec, Instant-Off.

4.2.5.10 Wake-Up by PCI Card

An input signal from PME on the PCI card awakens the system from a soft off state.

The choice: Enabled, Disabled.

4.2.5.11 Power On by Ring

An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state.

The choice: Enabled, Disabled.

4.2.5.12 Resume by Alarm

When "Enabled", your can set the date and time at which the RTC (real-time clock) alarm awakens the system from Suspend mode.

The choice: Enabled, Disabled.

4.2.5.13 Primary/Secondary IDE 0/1

This function is for setting IDE 0/1 on primary/secondary mode.

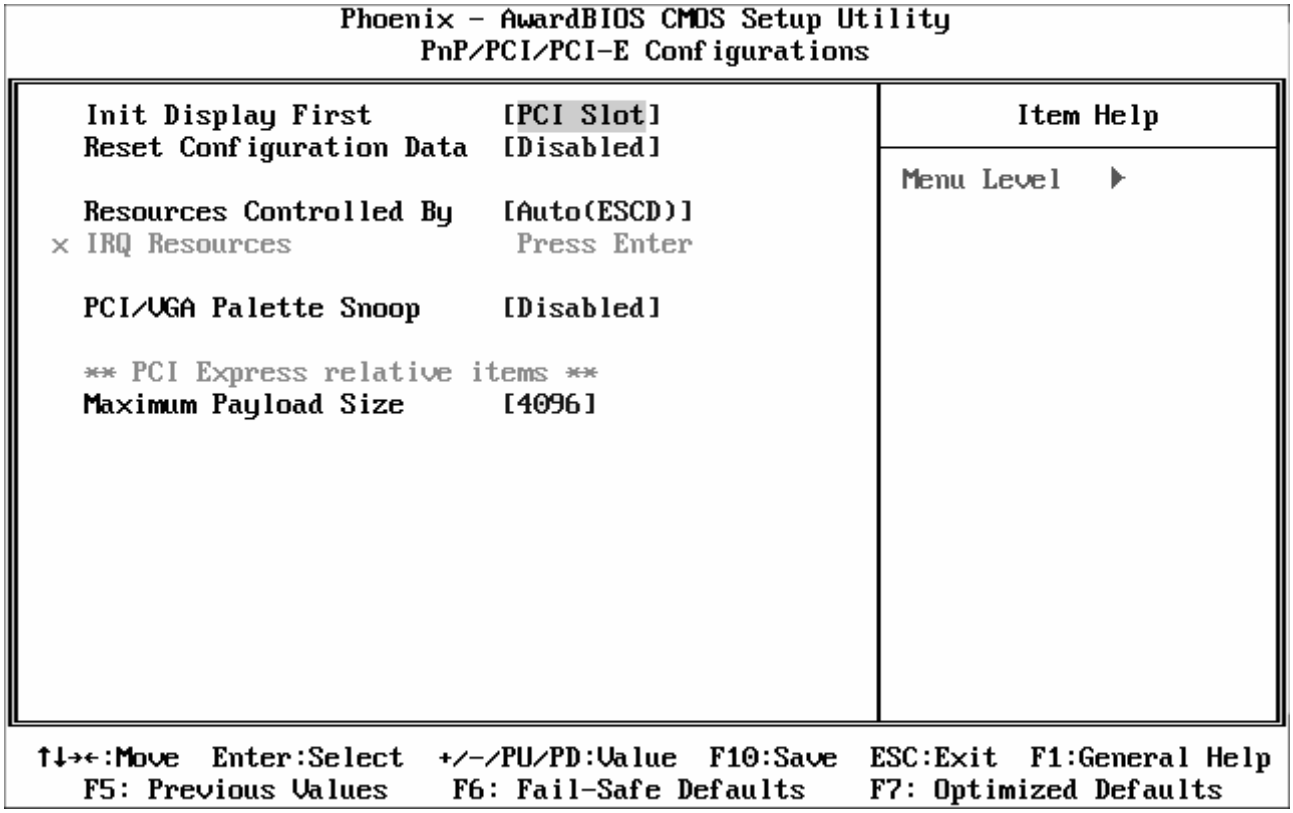
4.2.5.14 FDD,COM,LPT Port

System can be awaked by Floppy Drive, COM or LPT port.

4.2.5.15 PCI PIRQ[A-D]#

This function will cause the system waking up completely from the power management mode.

4.2.6 PnP/PCI/PCI-E Configurations


Phoenix - AwardBIOS CMOS Setup Utility
PnP/PCI/PCI-E Configurations
Init Display First [PCI Slot]
Reset Configuration Data [Disabled]
Resources Controlled By [Auto(ESCD)]
× IRQ Resources Press Enter
PCI/VGA Palette Snoop [Disabled]
** PCI Express relative items **
Maximum Payload Size [4096]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

4.2.6.1 Init Display First

This item allows you to decide to active whether PCI Slot or on-chip VGA first.

4.2.6.2 Reset Configuration Data

Normally, you leave this field Disabled. Select "Enabled" to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system cannot boot.

The choice: Enabled, Disabled.

4.2.6.3 Resources Controlled By

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®95. If you set this field to "Manual" choose specific resources by going into each of the sub menu that follows this field.

The choice: Auto (ESCD), Manual.

4.2.6.3.1 IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the DMA channel.

4.2.6.4 PCI/VGA Palette Snoop

This function determines if the graphics card should allow VGA palette snooping by a fixed function display card. It is only useful if a fixed-function display card using that requires a VGA-compatible graphics card to be present. Otherwise, leave the setting as default Disabled.

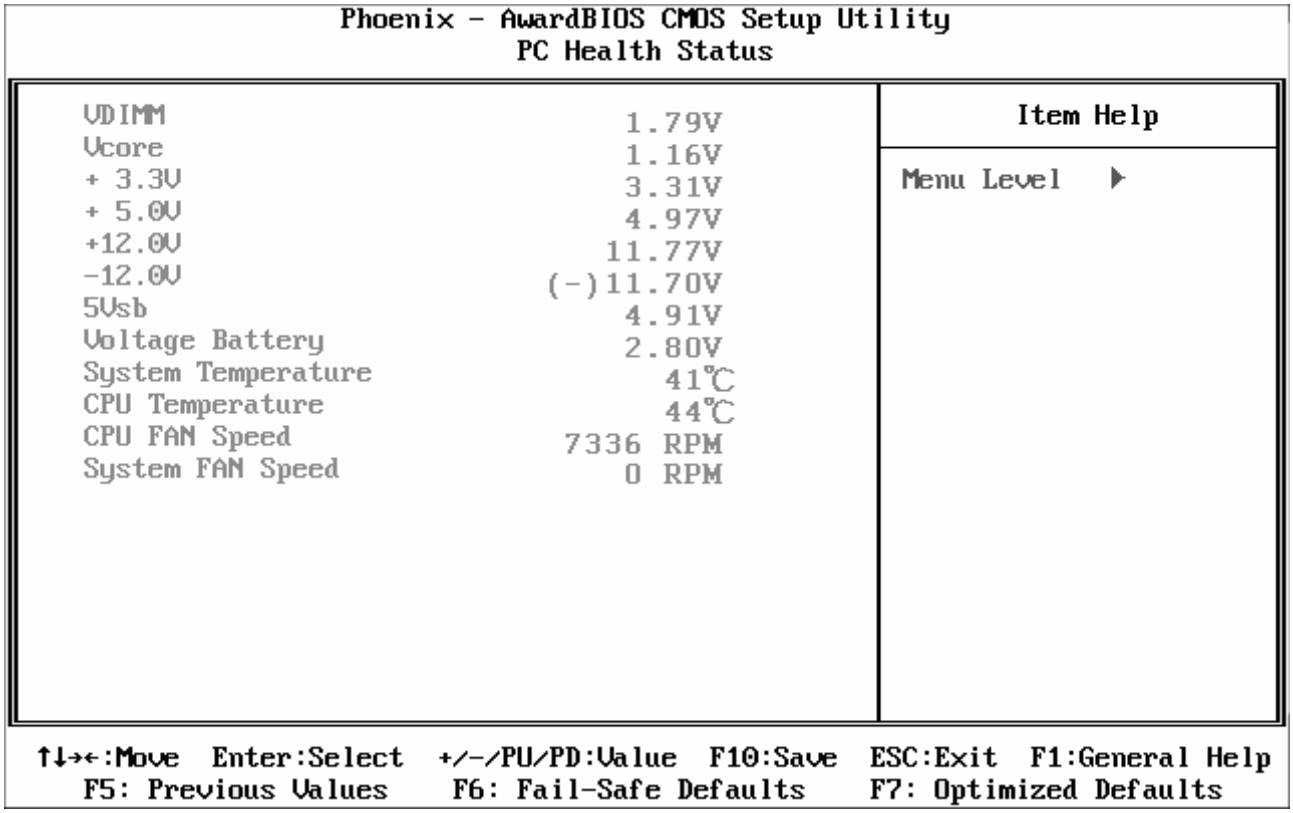
The choice: Enabled, Disabled.

4.2.6.5 Maximum Payload Size

Set maximum TLP playload size for the PCI Express devices. The unit is byte.

The choice: 128, 256, 512, 1024, 2048, 4096.

4.2.7 PC Health Status



4.2.7.1 VDIMM

The voltage level of the DRAM.

4.2.7.2 Vcore

The voltage level of CPU (Vcore).

4.2.7.3 +3.3V/+5V/+12V/-12V/5Vsb

Show you the voltage of +3.3V/+5V/+12V/-12V.

4.2.7.4 Voltage Battery

Show you the voltage level of the battery.

4.2.7.5 System/CPU Temperature

Show you the current system/CPU temperature.

4.2.7.6 System/CPU FAN Speed

Show you the current System/CPU FAN operating speed.

4.2.8 Load Fail-Safe Default

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Fail-Safe Defaults (Y/N)? N

Pressing 'Y' loads the BIOS default values for the most stable, minimal-performance system operations.

4.2.9 Load Optimized Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N)? N

Pressing 'Y' loads the default values that are factory settings for optimal performance system operations.

4.2.10 Supervisor/User Password Setting

You can set either supervisor or user password, or both of then. The differences between are:

Set Supervisor Password: can enter and change the options of the setup menus.

Set User Password: just can only enter but do not have the right to change the options of the setup menus. When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED.

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option (see Chapter 4). If the Security option is set to "System", the password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.

4.2.11 Exit Selecting

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? Y

Pressing "Y" stores the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? Y

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

Appendix

Appendix A: Watchdog Timer Programming

The Watchdog Timer (WDT) is a special hardware device that monitors the computer system during normal operation. The WDT has a clock circuit that times down from a set number to zero. If a monitored item occurs before that timer reaches zero, the WDT resets and counts down again. If for some reason the monitored item doesn't occur before the timer reaches zero, the WDT performs an action, such as a diagnostic operation (rebooting the computer) or generate an NMI.

ITE8712/8718			
	Address Port: 2Eh	Data Port: 2Fh	Mean
Watch Dog Configuration	87h		Enter Key
	01h		Enter Key
	55h		Enter Key
	55h		Enter Key
	07h	07h	Setup Watch Dog Function
	71h	F0h	Setup Watch Dog Function
	72h	C0h	C0h: select second mode, 40h: select minute mode
	73h	00h	Time-out occurs after 0~255 second/minute, 00h: Time-out disable

Appendix B: GPI/O Programming (ADE-6050 only)

The General Purpose I/O pins are provided for custom system design. The pin programming as input mode or output mode is depending on the configuration. The pin definitions are as the following table:

Digital IO Configuration		
BIOS	AWARD	**Pin Bit**
DGIOBASE	800h	
Pin No.	DGIO Port	
DI 2	DGIOBASE + 02h	0
DI 4	DGIOBASE + 02h	1
DI 6	DGIOBASE + 02h	2
DI 8	DGIOBASE + 02h	3
DO 3	DGIOBASE + 01h	0
DO 5	DGIOBASE + 01h	1
DO 7	DGIOBASE + 01h	2
DO 9	DGIOBASE + 01h	3
PIN 1	VCC	X
PIN 10	GND	X

Data Register

Read/Write: for output port

Read Only: for input port

Configure pin 3 to output LOW

【C Language】Example:

```
1. outportb(0x800, 0xFF); // enable dgio
2. iret = inportb(0x801);
3. iret = iret & ~0x01;      // set bit0 to 0
4. outportb(0x801, iret); // set pin3 to output low
```